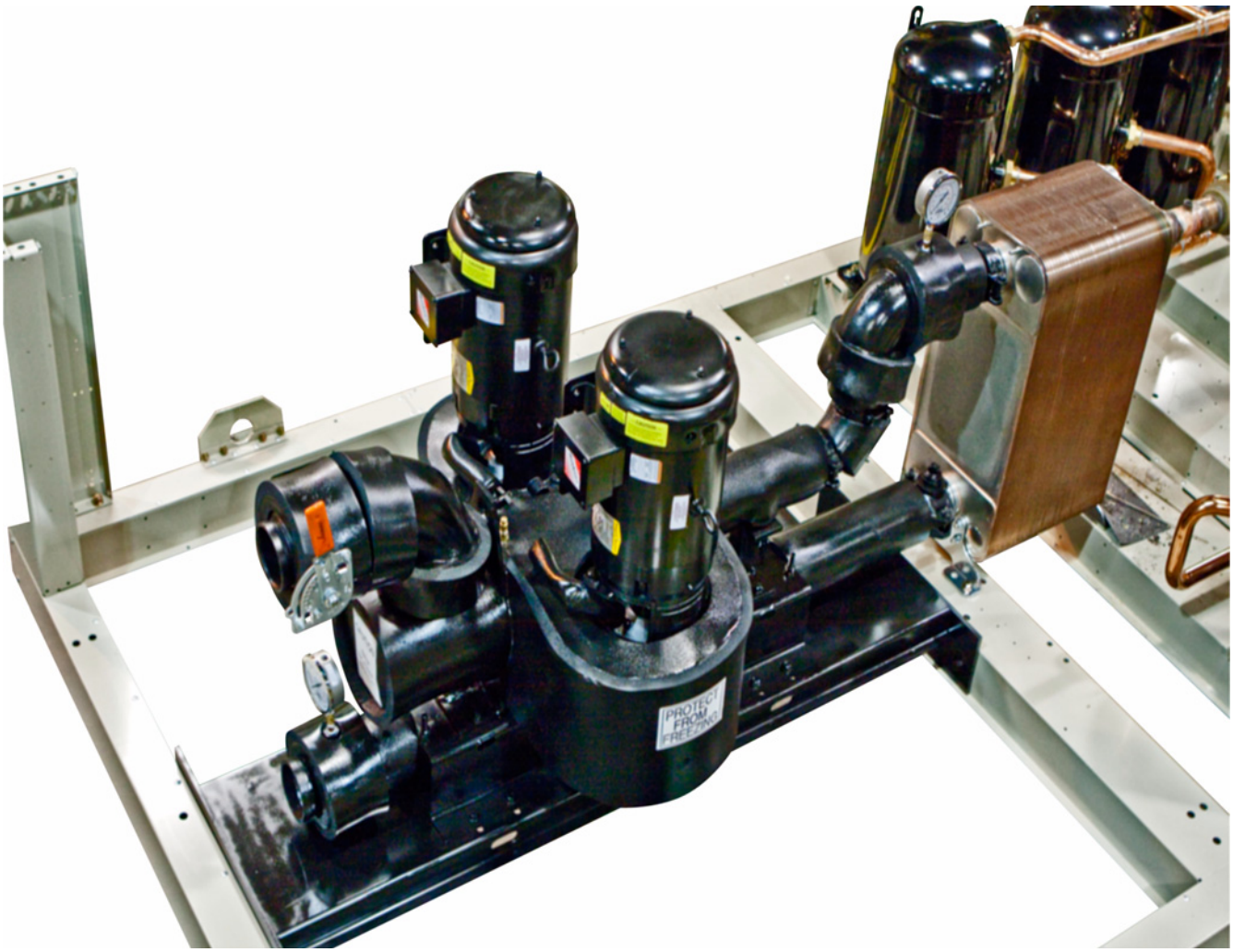
Installation and Maintenance Manual	IM 1110-1

Air-Cooled Scroll Compressor Chiller

Group: **Chillers**
Part Number: IM1110-1
Date: June 2014

AGZ025D-AGZ190D (REV 0A), Chillers with Pump Packages
R-410A, 60 Hz



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Introduction 3
Selection Procedures 8
Pressure Drop Data 15
Installation Information 16
Unit Weights 17
Vibration Isolators 19
Triple Duty Valve 21
Dimensions 23
Electrical Information 30
Pump Operation 46
Start-up and Shutdown 52
Setup for BAS Integration 54
System Maintenance 60

Hazard Identification

⚠ DANGER

Dangers indicate a hazardous situation which will result in death or serious injury if not avoided.

⚠ WARNING

Warnings indicate potentially hazardous situations, which can result in property damage, severe personal injury, or death if not avoided.

⚠ CAUTION

Cautions indicate potentially hazardous situations, which can result in personal injury or equipment damage if not avoided.

Manufactured in an ISO-certified facility

This manual contains information on the optional factory-installed pump packages for AGZ-D (REV 0A) vintage air-cooled scroll chillers. For other product information, go to www.DaikinApplied.com.

Cover Picture: Pump package shown during manufacture without evaporator insulation installed and without the shipped loose pump inlet “Y” strainer and outlet triple-duty valve.

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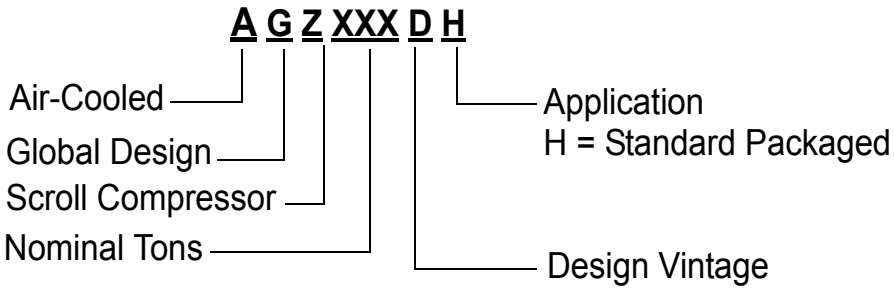


⚠ WARNING

Installation is to be performed by qualified personnel who are familiar with local codes and regulations.

⚠ CAUTION

Sharp edges on unit and coil surfaces are a potential hazard to personal safety. Avoid contact with them.

Note: Use this manual in conjunction with the current Installation and Maintenance Manual and Operation Manual, for AGZ-D packaged chillers. Both manuals are available on www.DaikinApplied.com.

General Description

This manual covers optional on-board, integrated, chilled water pump package available on all Daikin Model AGZ-D (REV 0A) chillers. Factory-installed pump packages provide important benefits:

- Greatly simplify the chilled water system design and installation
- Provide installation savings by reducing field piping, wiring and control costs
- Save valuable floor space inside the building
- Reduce project engineering content
- Greatly reduce pump operating cost with the optional variable flow pump Variable Frequency Drive (VFD)

Standard Components

Single Pump (Model 4380) is a single spring inside seal, vertical, in-line, radially split-case pump, serviceable without breaking pipe connections. The motor and pump rotating assembly can be serviced without removing the pump casing from the line.

Dual Pumps in a Single Casting (Model 4392) single-spring inside-seal vertical, in-line, radially split-case pumps, mounted in a common casing with a common inlet connection and outlet connection and including a flapper valve to prevent recirculation when only one pump is operating. An isolation valve is included that allows one pump to operate when the other is removed. The pumps are designed for duty/standby, not parallel operation. All information and performance curves for the single pump arrangement (Model 4380) can be used for the dual pump arrangement (Model 4392.)

PLUS

- “Y" type inlet strainer
- Combination triple-duty outlet valve having a drip-tight discharge shutoff valve, non-slam check valve, and flow throttling valve
- Combination suction guide with flow stabilizing outlet vanes and stainless steel strainer with a disposable fine-mesh strainer for start-up
- Factory power and control wiring from the AGZ-D chiller to the pump package control panel
- Flow switch mounted and wired
- Interconnecting schedule 40 piping with Victaulic® couplings
- Insulation of all cold surfaces

Options

- Water pressure gauges on the pump suction and discharge
- Expansion tank with size increments from 4.4 to 90 gallons, field installed (small sizes can be factory mounted
- Air separator with air vent, field installed
- Flex piping connections, field installed
- Storage tanks, vertical, insulated. (150, 300, 600, 1000 gallon sizes) with optional immersion heater, field installed.

Optional Variable Flow VFD

The operating cost savings resulting from using variable chilled water flow via a pump VFD has been well known for many years. In the past, however, its usage has been somewhat limited by the cost and uncertainty of field installing the required system pressure differential sensors.

Daikin Applied can now offer a variable chilled water flow system, completely self-contained within the pump package, by simply ordering the optional pump VFD-no external sensors required.

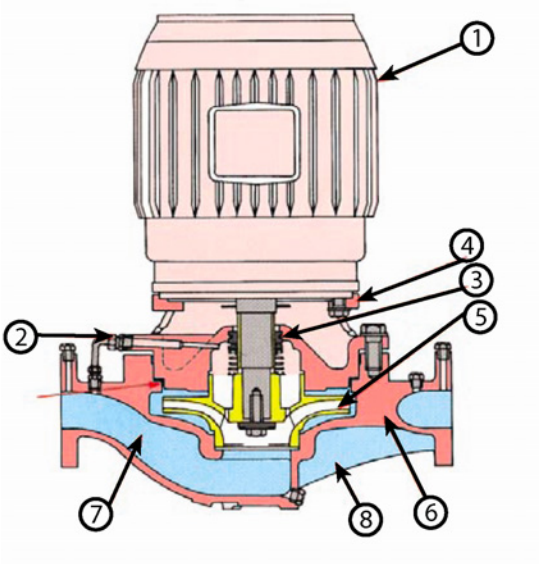
Including sensorless operation, there are four operating modes available with the optional factory-installed variable flow VFD:

1. **Sensorless Pressure Control:** Onboard measurements allow control of the pump speed to optimize chilled water flow with respect to water system pressure. External pressure sensors are not required, eliminating design and installation effort. The unit is factory-configured for this mode.
2. **BAS Input:** The pump speed will be controlled according to the voltage level from a BAS input signal.
3. **Locally Selected Constant Speed Control:** Operation of the pump at a constant speed selected on the VFD control panel. Among other things, this mode allows selecting a pump speed to match the actual system curve.
4. **Remote Sensor Control:** The VFD is wired to pressure sensors mounted in the chilled water piping system. This is the standard VFD control when a sensorless VFD is not used.

Pump Description

- Pump casing is cast iron.
- The casing suction and discharge connections are the same size and have tapped seal vent and pressure gauge connections.
- The mechanical seal is single-spring inside type with carbon against silicon carbide faces. EPDM elastomer with stainless steel and hardware are provided.
- Impellers are bronze, trimmed to design conditions and then balanced.
- The shaft sleeve is bronze extending the full length of the seal area.

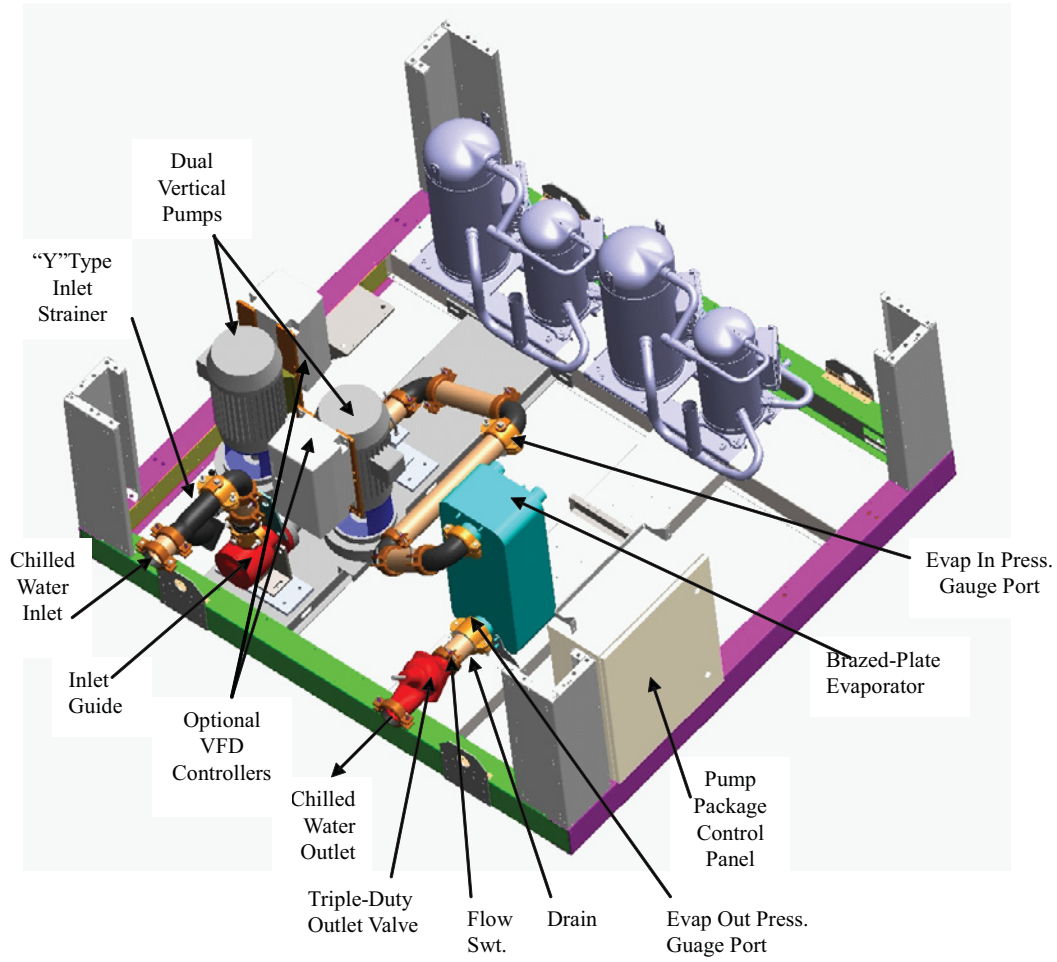
Figure 1: Model 4380 Design Features



1. Industry standard face mounted motor.
2. Flush and vent connection removes entrained air and ensures liquid at seal face at all times.
3. Inside type mechanical seal with Silicon Carbide seat, serviceable without breaking pipe connections.
4. Heavy cylindrical bracket with 360° register on both flanges provides a rigid union of pump and motor.
5. Dynamically balanced impeller assures smooth vibration-free operation.
6. Radially split casing with equal suction and discharge flange sizes. Separate tapped openings for gauge, flush and drain connections.
7. Liberal inlet passageways and straightening vanes provide optimum suction performance and quiet operation.
8. Ribs cast integral with casing. Machined surface to accept floor support when specified.
9. Confined casing gasket to meet stringent industrial temperature and pressure applications.

Component Location

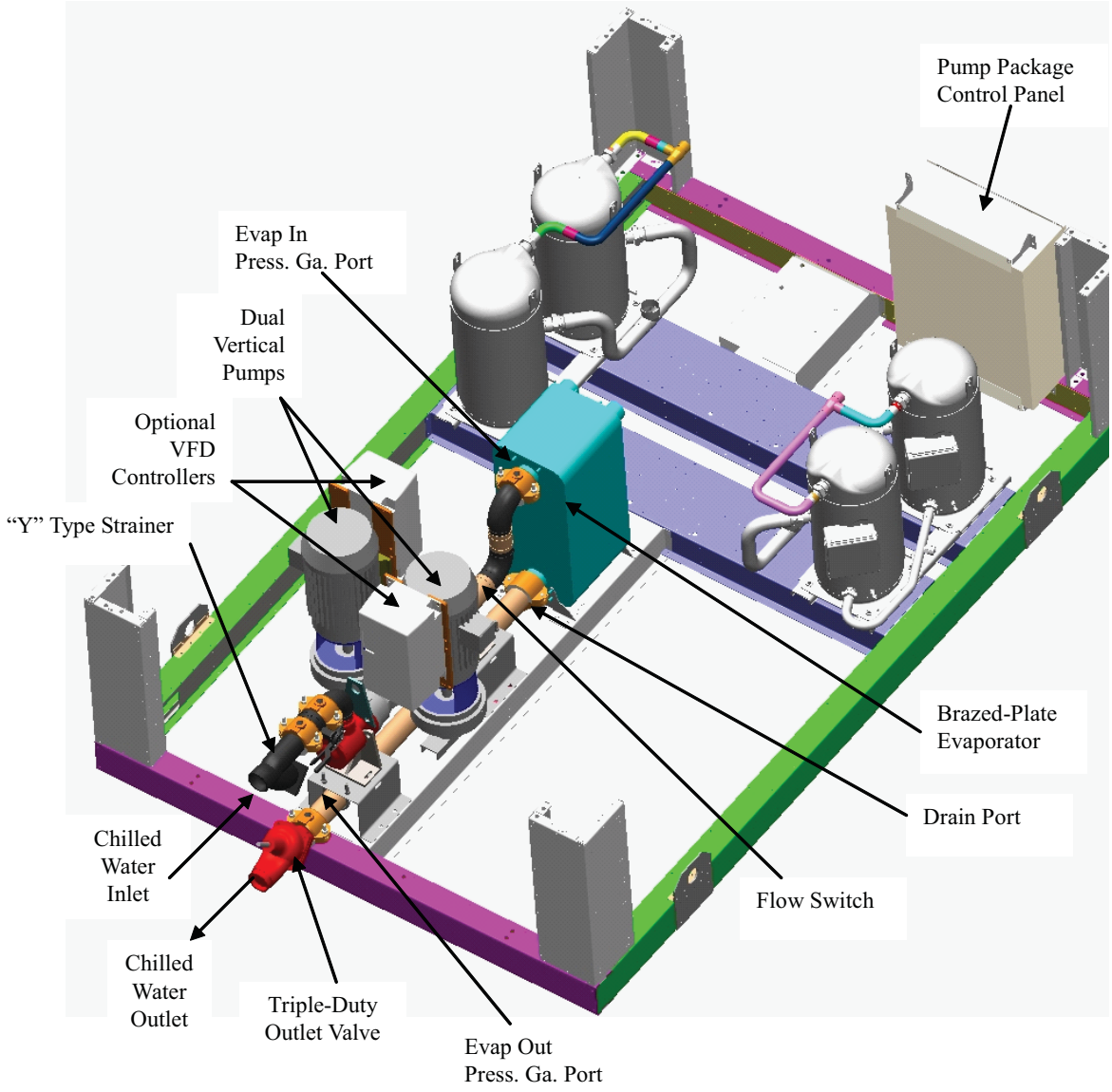
Figure 2: Component location for models AGZ025D - AGZ070D



Notes:

1. Dual pumps having a common housing and inlet and outlet connections as shown. An available single pump arrangement can replace the dual pump and will have a similar piping layout.
2. The inlet strainer and triple-duty valve are shipped separate for field installation.
3. The pump package control panel is located under the main unit control panel. The piping connections are on the left side of the chiller unit when looking at the control panel.
4. Pump drains are located under the pump casing, ¼ in. NPT.
5. Pipe drains are 1 in. NPT.

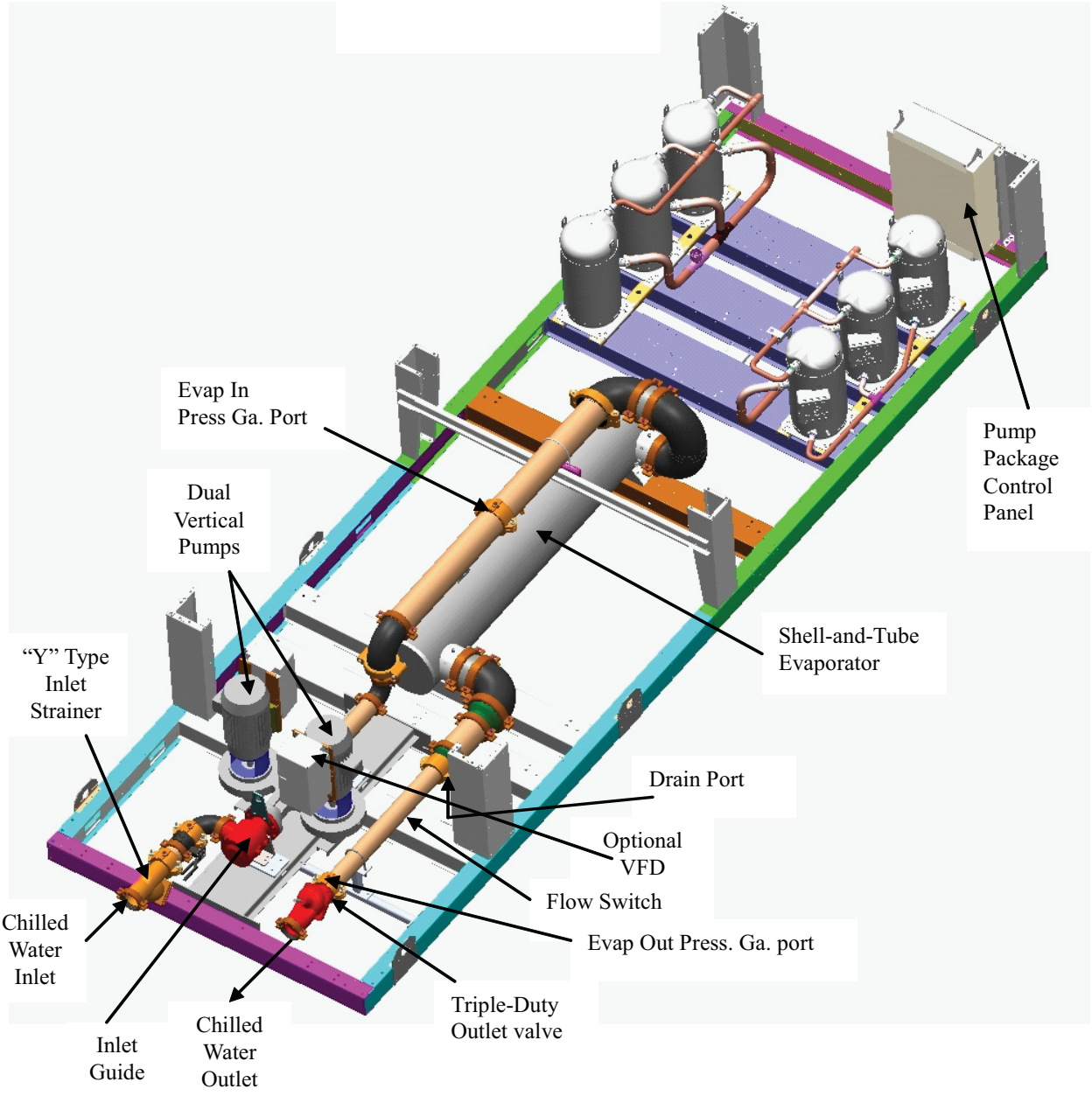
Figure 3: Component location for models AGZ075D - AGZ130D



Notes:

1. Dual pump having a common inlet and outlet shown. An available single pump arrangement can replace the dual pump and will have a similar piping layout.
2. The inlet strainer and triple-duty valve are shipped separate for field installation.
3. The pump package control panel is located under the main unit control panel. The piping connections are at the rear of the unit, opposite the control panel.
4. Pump drains are located under the pump casing, ¼ in. NPT.
5. Pipe drains are 1 in. NPT.

Figure 4: Component location for models AGZ140D - AGZ190D



Notes:

1. Dual pump having a common inlet and outlet shown. An available single pump arrangement can replace the dual pump and will have a similar piping layout.
2. The inlet strainer and triple-duty valve are shipped separate for field installation.
3. The pump package control panel is located under the main unit control panel. The piping connections are at the rear of the unit, opposite the control panel.
4. Pump drains are located under the pump casing, ¼ in. NPT.
5. Pipe drains are 1 in. NPT.

Selection Procedure

This section provides material to make pump selections. Your Daikin Applied sales representative can make computerized selections and provide pricing. The AGZ-D model size, the chilled water flow, and the total dynamic external system head are required to select a pump package.

AGZ Model Size

The AGZ-D model size is determined by the selection program or selected from the current version of the Daikin Applied catalog available from your local sales representative or www.DaikinApplied.com.

Chilled Water Flow

The chilled water flow will either be specified or determined from the AGZ selection program.

Total Dynamic System Head

The total system dynamic head is the sum of three components:

1. Internal pump package losses from piping, valves and fittings from Table 1
2. Evaporator pressure drop from the selection program or from curves on page 15
3. External system pressure drop as determined by the system designer.

For systems using a glycol solution:

"For the internal package pressure drop, use Table 1 values. Glycol has no significant impact.

"For the evaporator pressure drop, the Daikin Applied selection program includes an automatic correction factor. If the pressure drop is determined from the pressure drop curves, use the correction factors from Table 2 to calculate the water pressure drop for glycol. Do not use uncorrected table values for the evaporator.

"The external system pressure drop must also account for glycol use.

Table 1: Pump Package Internal Pressure Drop and Water Volume

AGZ-D MODEL	PRESS DROP (ft)	WATER-VOLUME (gal.)	AGZ-D MODEL	PRESS. DROP (ft)	WATER VOLUME (gal.)	AGZ-D MODEL	PRESS. DROP (ft)	WATER VOLUME (gal.)	AGZ-D MODEL	PRESS. DROP (ft)	WATER VOLUME (gal.)
025	3.7	4	**055**	7.1	6	**090**	16.3	11	**160**	12.7	65
030	4.3	4	**060**	8.0	8	**100**	10.3	11	**180**	15.9	65
035	4.6	4	**065**	8.7	9	**110**	10.5	12	**190**	18.4	65
040	4.9	4	**070**	9.5	9	**125**	12.9	13			
045	5.6	4	**075**	10.8	9	**130**	16.0	14			
050	6.3	5	**080**	14.0	9	**140**	10.0	65			

Note: 1.Internal pump package pressure drop is based on the AGZ nominal flow and includes the pipe, fittings and suction guide/strainer. It does not include the evaporator pressure drop. Lower flow rates have a negligible affect on the pump selection.

Note: 2.Water volume shown is for pump package components, piping and fittings and includes the evaporator.

Table 2: Glycol Correction Factors

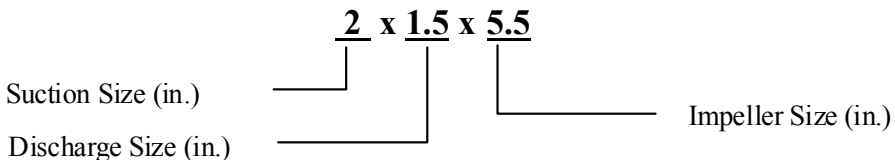
Ethylene Glycol							Propylene Glycol						
% E.G.	Freeze Point		Model 025-130		Model 140-190		% P.G. Flow	Freeze Point		Model 025-130		Model 140-190	
	° F	° C	Flow	PD	Flow	PD		° F	° C	Flow	PD	Flow	PD
10	26	-3.3	1.097	1.097	1.038	1.101	**10**	26	-3.3	1.016	1.100	1.019	1.097
20	18	-7.8	1.226	1.226	1.063	1.224	**20**	19	-7.2	1.032	1.211	1.035	1.201
30	7	-13.9	1.369	1.369	1.095	1.358	**30**	9	-12.8	1.057	1.380	1.059	1.351
40	-7	-21.7	1.557	1.557	1.134	1.536	**40**	-5	-20.6	1.092	1.703	1.095	1.598
50	-28	-33.3	1.791	1.791	1.184	1.755	**50**	-27	-32.8	1.140	2.251	1.142	2.039

Pump Selection Procedure

A family of pump sizes has been pre-selected for groups of AGZ units and shown in Table 3.

Using the required flow and total system head, select the best pump from the table. Flow values are shown for minimum, nominal, and near-maximum flow rates for each AGZ size. For flow rates falling between these values, check the pump selection for the higher and lower flow. The impeller will be trimmed for specific job conditions after order placement.

Pump Nomenclature



Selection Examples

Select: a pump for an AGZ 025-D with 65 gpm of water flow at a 90 ft external head, dual pumps. From Table 1., the internal pump package pressure drop is 3.7 ft.

From the pressure drop curves on page 15, the evaporator pressure drop is 9.4 ft.

Internal Pump Package	3.7
Evaporator	9.4
External	90.0
Total Head	103.1

From Table 3., select a dual 2 x 2 x 6 pump, 3600 rpm, 7.5 hp. Although a 5 hp pump is adequate at design conditions, a 7.5 hp pump will provide non-overloading characteristics.

Table 3: AGZ-D Unit/Pump Combinations

Note: Some unit gpm and head combination do not have a valid selection and are absent from the table.

Unit Model	Nom. Tons	Nom. gpm	Min. gpm	Max. gpm	Unit gpm	Total Head ft.	Single Pump			Dual Pumps		
							Size	rpm	HP	Size	rpm	HP
AGZ 025D	27.3	66	41	109	41	25	2x2x6	1800	1	2x2x6	1800	1
					41	50	1.5x1.5x8	1800	2	2x2x8	1800	3
					41	75	1.5x1.5x6	3600	3	2x2x8	3600	5
					41	100	1.5x1.5x6	3600	5	2x2x6	3600	5
					41	125	1.5x1.5x6	3600	5	-	-	-
					66	25	2x2x6	1800	1	2x2x6	1800	1
					66	50	2x2x8	1800	3	2x2x8	1800	3
					66	75	1.5x1.5x6	1800	5	3x3x6	1800	5
					66	100	1.5x1.5x6	3600	5	2x2x6	3600	5
					66	125	1.5x1.5x6	3600	5	-	-	-
					87	25	2x2x6	1800	2	2x2x6	1800	2
					87	50	2x2x8	1800	3	2x2x8	1800	3
					87	75	2x2x6	3600	5	2x2x6	3600	5
AGZ 030D	31.6	76	47	126	47	25	2x2x6	1800	1	2x2x6	1800	1
					47	50	2x2x8	1800	3	2x2x8	1800	3
					47	75	1.5x1.5x6	3600	3	2x2x8	3600	5
					47	100	1.5x1.5x6	3600	5	2x2x6	3600	5
					47	125	1.5x1.5x6	3600	5	-	-	-
					76	25	2x2x6	1800	1	2x2x6	1800	1
					76	50	2x2x8	1800	3	2x2x8	1800	3
					76	75	1.5x1.5x6	3600	3	2x2x6	3600	5
					76	100	1.5x1.5x6	3600	5	-	-	-
					101	25	3x3x6	1800	2	3x3x6	1800	2
					101	50	2x2x8	1800	3	2x2x8	1800	3
					101	75	2x2x6	3600	5	2x2x6	3600	5

Table 3: AGZ-D Unit/Pump Combinations Continued

Unit Model	Nom. Tons	Nom. gpm	Min. gpm	Max. gpm	Unit gpm	Total Head ft.	Single			Dual		
							Size	rpm	HP	Size	rpm	HP
AGZ 035D	34.9	84	52	140	52	50	2x2x8	1800	3	2x2x8	1800	3
					52	75	1.5x1.5x6	3600	3	2x2x6	3600	5
					52	100	1.5x1.5x6	3600	5	2x2x6	3600	5
					52	125	1.5x1.5x6	3600	5	2x2x6	3600	7.5
					84	25	2x2x6	1800	2	2x2x6	1800	2
					84	50	2x2x8	1800	3	2x2x8	1800	3
					84	75	2x2x6	3600	5	2x2x6	3600	5
					84	100	1.5x1.5x6	3600	5	2x2x6	3600	7.5
					84	125	2x2x6	3600	7.5	2x2x6	3600	7.5
					112	25	2x2x8	1800	2	2x2x8	1800	2
					112	50	2x2x8	1800	3	2x2x8	1800	3
					112	75	2x2x6	3600	5	2x2x6	3600	5
					112	100	2x2x6	3600	7.5	2x2x6	3600	7.5
AGZ 040D	37.9	91	57	152	57	50	2x2x8	1800	3	2x2x8	1800	3
					57	75	1.5x1.5x6	3600	3	3x3x6	3600	5
					57	100	1.5x1.5x6	3600	5	2x2x6	3600	5
					57	125	1.5x1.5x6	3600	5	2x2x6	3600	7.5
					91	25	2x2x6	1800	2	2x2x6	1800	2
					91	50	2x2x8	1800	3	2x2x8	1800	3
					91	75	2x2x6	3600	5	2x2x6	3600	5
					91	100	2x2x6	3600	7.5	2x2x6	3600	7.5
					91	125	2x2x6	3600	7.5	2x2x6	3600	7.5
					121	25	3x3x6	1800	2	3x3x6	1800	2
					121	50	2x2x8	1800	3	2x2x8	1800	3
					121	75	2x2x6	3600	5	2x2x6	3600	5
					121	100	2x2x6	3600	7.5	2x2x6	3600	7.5
AGZ 045D	42.6	102	64	170	64	50	2x2x8	1800	3	2x2x8	1800	3
					64	75	1.5x1.5x6	1800	5	3x3x6	1800	5
					64	100	1.5x1.5x6	3600	5	2x2x6	3600	5
					64	125	1.5x1.5x6	3600	5	2x2x6	3600	7.5
					102	25	3x3x6	1800	2	3x3x6	1800	2
					102	50	2x2x8	1800	3	2x2x8	1800	3
					102	75	2x2x6	3600	5	2x2x6	3600	5
					102	100	2x2x6	3600	7.5	2x2x6	3600	7.5
					136	25	3x3x6	1800	2	3x3x6	1800	2
					136	50	2x2x8	1800	5	2x2x8	1800	5
					136	75	2x2x6	3600	5	2x2x6	3600	5
					136	100	2x2x6	3600	7.5	2x2x6	3600	7.5
AGZ 050D	48.1	115	72	192	72	50	2x2x8	1800	3	2x2x8	1800	3
					72	75	1.5x1.5x6	3600	3	2x2x6	3600	5
					72	100	1.5x1.5x6	3600	5	2x2x6	3600	7.5
					72	125	2x2x6	3600	7.5	2x2x6	3600	7.5
					115	25	2x2x8	1800	2	2x2x8	1800	2
					115	50	2x2x8	1800	3	2x2x8	1800	3
					115	75	2x2x6	3600	5	2x2x6	3600	5
					115	100	2x2x6	3600	7.5	2x2x6	3600	7.5
					154	25	3x3x6	1800	2	3x3x6	1800	2
					154	50	2x2x8	1800	5	2x2x8	1800	5
					154	75	2x2x6	3600	7.5	2x2x6	3600	7.5
					154	100	2x2x6	3600	7.5	2x2x6	3600	7.5

Note: Some unit gpm and head combination do not have a valid selection and are absent from the table.

Table 3: AGZ-D Unit/Pump Combinations Continued

Unit Model	Nom. Tons	Nom. gpm	Min. gpm	Max. gpm	Unit gpm	Total Head ft.	Single Pump			Dual Pumps		
							Size	RPM	HP	Size	RPM	HP
AGZ 055D	51.6	124	77	206	77	50	2x2x8	1800	3	2x2x8	1800	3
					77	75	1.5x1.5x6	3600	3	2x2x6	3600	5
					77	100	1.5x1.5x6	3600	5	2x2x6	3600	7.5
					77	125	2x2x6	3600	7.5	2x2x6	3600	7.5
					124	25	3x3x6	1800	2	3x3x6	1800	2
					124	50	2x2x8	1800	3	2x2x8	1800	3
					124	75	2x2x6	3600	5	2x2x6	3600	5
					124	100	2x2x6	3600	7.5	2x2x6	3600	7.5
					165	25	3x3x6	1800	2	3x3x6	1800	2
					165	50	3x3x8	1800	5	3x3x8	1800	5
					165	75	2x2x6	3600	7.5	2x2x6	3600	7.5
AGZ 060D	56.1	135	84	224	84	50	2x2x8	1800	3	2x2x8	1800	3
					84	75	2x2x6	3600	5	2x2x6	3600	5
					84	100	1.5x1.5x6	3600	5	2x2x6	3600	7.5
					84	125	2x2x6	3600	7.5	2x2x6	3600	7.5
					135	25	3x3x6	1800	2	3x3x6	1800	2
					135	50	2x2x8	1800	5	2x2x8	1800	5
					135	75	2x2x6	3600	5	2x2x6	3600	5
					135	100	2x2x6	3600	7.5	2x2x6	3600	7.5
					135	125	2x2x6	3600	10	2x2x6	3600	10
					180	25	3x3x6	1800	2	3x3x6	1800	2
					180	50	3x3x8	1800	5	3x3x8	1800	5
					180	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					180	100	2x2x6	3600	10	2x2x6	3600	10
					180	125	2x2x8	3600	10	2x2x8	3600	10
AGZ 065D	58.1	139	87	232	87	50	2x2x8	1800	3	2x2x8	1800	3
					87	75	2x2x6	3600	5	2x2x6	3600	5
					87	100	2x2x6	3600	7.5	2x2x6	3600	7.5
					87	125	2x2x6	3600	7.5	2x2x6	3600	7.5
					139	25	3x3x6	1800	2	3x3x6	1800	2
					139	50	2x2x8	1800	5	2x2x8	1800	5
					139	75	2x2x6	3600	5	2x2x6	3600	5
					139	100	2x2x6	3600	7.5	2x2x6	3600	7.5
					139	125	2x2x6	3600	10	2x2x6	3600	10
					186	25	3x3x6	1800	2	3x3x6	1800	2
					186	50	3x3x8	1800	5	3x3x8	1800	5
					186	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					186	100	2x2x6	3600	10	2x2x6	3600	10
AGZ 070D	64.1	154	96	256	96	50	2x2x8	1800	3	2x2x8	1800	3
					96	75	2x2x6	3600	5	2x2x6	3600	5
					96	100	2x2x6	3600	7.5	2x2x6	3600	7.5
					96	125	2x2x6	3600	10	2x2x6	3600	10
					154	25	3x3x6	1800	2	3x3x6	1800	2
					154	50	2x2x8	1800	5	2x2x8	1800	5
					154	75	2x2x6	3600	7.5	2x2x6	3600	7.5
					154	100	2x2x6	3600	7.5	2x2x6	3600	7.5
					154	125	1.5x1.5x8	3600	10	2x2x6	3600	10
					205	25	3x3x8	1800	3	3x3x8	1800	3
					205	50	3x3x8	1800	5	3x3x8	1800	5
					205	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					205	100	3x3x6	3600	10	3x3x6	3600	10

Note: Some unit gpm and head combination do not have a valid selection and are absent from the table.

Table 3: AGZ-D Unit/Pump Combinations Continued

Unit	Nom.	Nom.	Min.	Max.	Unit	Total Head	Single Pump			Dual Pumps		
Model	Tons	gpm	gpm	gpm	gpm	ft.	Size	rpm	HP	Size	rpm	HP
AGZ 075D	73.1	175	110	292	110	50	2x2x8	1800	3	2x2x8	1800	3
					110	75	2x2x6	3600	5	2x2x6	3600	5
					110	100	2x2x6	3600	7.5	2x2x6	3600	7.5
					110	125	2x2x6	3600	10	2x2x6	3600	10
					175	50	3x3x8	1800	5	3x3x8	1800	5
					175	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					175	100	2x2x6	3600	10	2x2x6	3600	10
					175	125	2x2x8	3600	15	2x2x8	3600	15
					234	25	3x3x8	1800	3	3x3x8	1800	3
					234	50	3x3x8	1800	5	3x3x8	1800	5
					234	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					234	100	2x2x8	3600	15	2x2x8	3600	15
					234	125	2x2x8	3600	15	2x2x8	3600	15
AGZ 080D	81.1	195	122	324	122	50	2x2x8	1800	3	2x2x8	1800	3
					122	75	2x2x6	3600	5	2x2x6	3600	5
					122	100	2x2x6	3600	7.5	2x2x6	3600	7.5
					122	125	2x2x6	3600	10	2x2x6	3600	10
					195	25	3x3x6	1800	3	3x3x6	1800	3
					195	50	3x3x8	1800	5	3x3x8	1800	5
					195	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					195	100	2x2x6	3600	10	2x2x6	3600	10
					195	125	2x2x8	3600	15	2x2x8	3600	15
					260	25	3x3x6	1800	3	3x3x6	1800	3
					260	50	3x3x8	1800	5	3x3x8	1800	5
					260	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					260	100	2x2x6	3600	10	2x2x6	3600	10
					260	120	2x2x8	3600	15	2x2x8	3600	15
AGZ 090D	89.2	214	134	357	134	50	2x2x8	1800	5	2x2x8	1800	5
					134	75	2x2x6	3600	5	2x2x6	3600	5
					134	100	2x2x6	3600	7.5	2x2x6	3600	7.5
					134	125	2x2x6	3600	10	2x2x6	3600	10
					214	50	3x3x8	1800	5	3x3x8	1800	5
					214	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					214	100	4x4x6	3600	15	4x4x6	3600	15
					214	125	2x2x8	3600	15	2x2x8	3600	15
					285	25	4x4x6	1800	3	4x4x6	1800	3
					285	50	3x3x8	1800	7.5	3x3x8	1800	7.5
					285	75	3x3x6	3600	10	3x3x6	3600	10
					285	100	4x4x6	3600	15	4x4x6	3600	15
AGZ 100D	99.8	240	150	399	150	50	2x2x8	1800	5	2x2x8	1800	5
					150	75	2x2x6	3600	7.5	2x2x6	3600	7.5
					150	100	2x2x6	3600	7.5	2x2x6	3600	7.5
					150	125	2x2x6	3600	15	2x2x6	3600	15
					240	25	3x3x8	1800	3	3x3x8	1800	3
					240	50	3x3x8	1800	5	3x3x8	1800	5
					240	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					240	100	2x2x8	3600	15	2x2x8	3600	15
					240	125	2x2x8	3600	15	2x2x8	3600	15
					319	25	4x4x6	1800	3	4x4x6	1800	3
					319	50	3x3x8	1800	7.5	3x3x8	1800	7.5
					319	75	3x3x8	3600	10	3x3x8	3600	10
					319	100	4x4x6	3600	15	4x4x6	3600	15

Note: Some unit gpm and head combination do not have a valid selection and are absent from the table.

Table 3: AGZ-D Unit/Pump Combinations Continued

Unit Model	Nom. Tons	Nom. gpm	Min. gpm	Max. gpm	Unit gpm	Total Head ft.	Single Pump			Dual Pumps		
							Size	rpm	HP	Size	rpm	HP
AGZ 110D	106.1	255	159	424	159	50	2x2x8	1800	5	2x2x8	1800	5
					159	75	2x2x6	3600	7.5	2x2x6	3600	7.5
					159	100	2x2x6	3600	7.5	2x2x6	3600	7.5
					159	125	2x2x6	3600	15	2x2x6	3600	15
					255	25	3x3x6	1800	3	3x3x6	1800	3
					255	50	3x3x8	1800	5	3x3x8	1800	5
					255	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					255	100	2x2x6	3600	10	2x2x6	3600	10
					255	125	2x2x8	3600	15	2x2x8	3600	15
					340	25	4x4x6	1800	3	4x4x6	1800	3
					340	50	3x3x8	1800	7.5	3x3x8	1800	7.5
					340	75	4x4x6	3600	10	4x4x6	3600	10
					340	100	4x4x6	3600	15	4x4x6	3600	15
AGZ 125D	117.1	281	176	468	176	50	3x3x8	1800	5	3x3x8	1800	5
					176	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					176	100	2x2x6	3600	10	2x2x6	3600	10
					176	125	2x2x8	3600	15	2x2x8	3600	15
					281	25	4x4x6	1800	3	4x4x6	1800	3
					281	50	3x3x8	1800	7.5	3x3x8	1800	7.5
					281	75	3x3x6	3600	10	3x3x6	3600	10
					281	100	4x4x6	3600	15	4x4x6	3600	15
					375	25	4x4x6	1800	5	4x4x6	1800	5
					375	50	3x3x6	3600	10	4x4x8	3600	10
					375	75	4x4x6	3600	15	4x4x6	3600	15
					375	100	4x4x6	3600	15	4x4x6	3600	15
AGZ 130D	129.6	311	194	518	194	25	3x3x6	1800	3	3x3x6	1800	3
					194	50	3x3x8	1800	5	3x3x8	1800	5
					194	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					194	100	2x2x6	3600	10	2x2x6	3600	10
					194	125	2x2x8	3600	15	2x2x8	3600	15
					311	25	4x4x6	1800	3	4x4x6	1800	3
					311	50	3x3x8	1800	7.5	3x3x8	1800	7.5
					311	75	3x3x8	3600	10	3x3x8	3600	10
					311	100	4x4x6	3600	15	4x4x6	3600	15
					415	25	3x3x6	3600	7.5	4x4x8	3600	10
					415	50	4x4x6	3600	10	4x4x8	3600	10
					415	75	4x4x6	3600	15	4x4x6	3600	15
					415	100	4x4x6	3600	15	4x4x6	3600	15
AGZ 140D	136.2	327	204	545	204	50	3x3x8	1800	5	3x3x8	1800	5
					204	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					204	100	3x3x6	3600	10	4x4x6	3600	15
					204	125	3x3x6	3600	15	3x3x6	3600	15
					327	50	3x3x8	1800	7.5	3x3x8	1800	7.5
					327	75	3x3x8	3600	10	3x3x8	3600	10
					327	100	4x4x6	3600	15	4x4x6	3600	15
					327	125	3x3x8	3600	20	3x3x8	3600	20
					436	25	4x4x8	1800	5	4x4x8	1800	5
					436	50	4x4x8	1800	10	4x4x8	1800	10
					436	75	4x4x6	3600	15	4x4x6	3600	15
					436	100	3x3x8	3600	20	3x3x8	3600	20

Note: Some unit gpm and head combination do not have a valid selection and are absent from the table.

Table 3: AGZ-D Unit/Pump Combinations Continued

Unit Model	Nom. Tons	Nom. gpm	Min. gpm	Max. gpm	Unit gpm	Total Head ft.	Single Pump			Dual Pumps		
							Size	rpm	HP	Size	rpm	HP
AGZ 160D	153.3	368	230	613	230	50	3x3x8	1800	5	3x3x8	1800	5
					230	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					230	100	3x3x6	3600	15	3x3x6	3600	15
					230	125	3x3x8	3600	15	3x3x8	3600	15
					368	25	4x4x6	1800	5	4x4x6	1800	5
					368	50	4x4x8	1800	10	4x4x8	1800	10
					368	75	4x4x6	3600	15	4x4x6	3600	15
					368	100	4x4x6	3600	15	4x4x6	3600	15
					368	125	3x3x8	3600	20	3x3x8	3600	20
					491	25	4x4x8	1800	7.5	4x4x8	1800	7.5
					491	50	4x4x8	1800	10	4x4x8	1800	10
					491	75	4x4x6	3600	15	4x4x6	3600	15
					491	100	3x3x8	3600	20	3x3x8	3600	20
AGZ 180D	172.2	413	258	689	258	50	3x3x8	1800	5	3x3x8	1800	5
					258	75	3x3x6	3600	7.5	3x3x6	3600	7.5
					258	100	4x4x6	3600	15	4x4x6	3600	15
					258	125	3x3x8	3600	20	3x3x8	3600	20
					413	25	4x4x8	1800	5	4x4x8	1800	5
					413	50	4x4x8	1800	10	4x4x8	1800	10
					413	75	4x4x6	3600	15	4x4x6	3600	15
					413	100	4x4x6	3600	15	4x4x6	3600	15
					413	125	3x3x8	3600	20	3x3x8	3600	20
					551	25	4x4x8	1800	7.5	4x4x8	1800	7.5
					551	50	4x4x8	1800	10	4x4x8	1800	10
					551	75	4x4x6	3600	15	4x4x6	3600	15
					551	100	4x4x6	3600	20	4x4x6	3600	20
AGZ 190D	180.1	432	270	720	270	50	3x3x8	1800	7.5	3x3x8	1800	7.5
					270	75	3x3x6	3600	10	3x3x6	3600	10
					270	100	4x4x6	3600	15	4x4x6	3600	15
					270	125	3x3x8	3600	20	3x3x8	3600	20
					432	25	4x4x8	1800	5	4x4x8	1800	5
					432	50	4x4x8	1800	10	4x4x8	1800	10
					432	75	4x4x6	3600	15	4x4x6	3600	15
					432	100	3x3x8	3600	20	3x3x8	3600	20
					576	25	4x4x8	1800	7.5	4x4x8	1800	7.5
					576	50	4x4x8	1800	15	4x4x8	1800	15
					576	75	4x4x6	3600	15	4x4x6	3600	15
					576	100	4x4x6	3600	20	4x4x6	3600	20

Note: Some unit gpm and head combination do not have a valid selection and are absent from the table.

Figure 5: Pressure Drop Curves

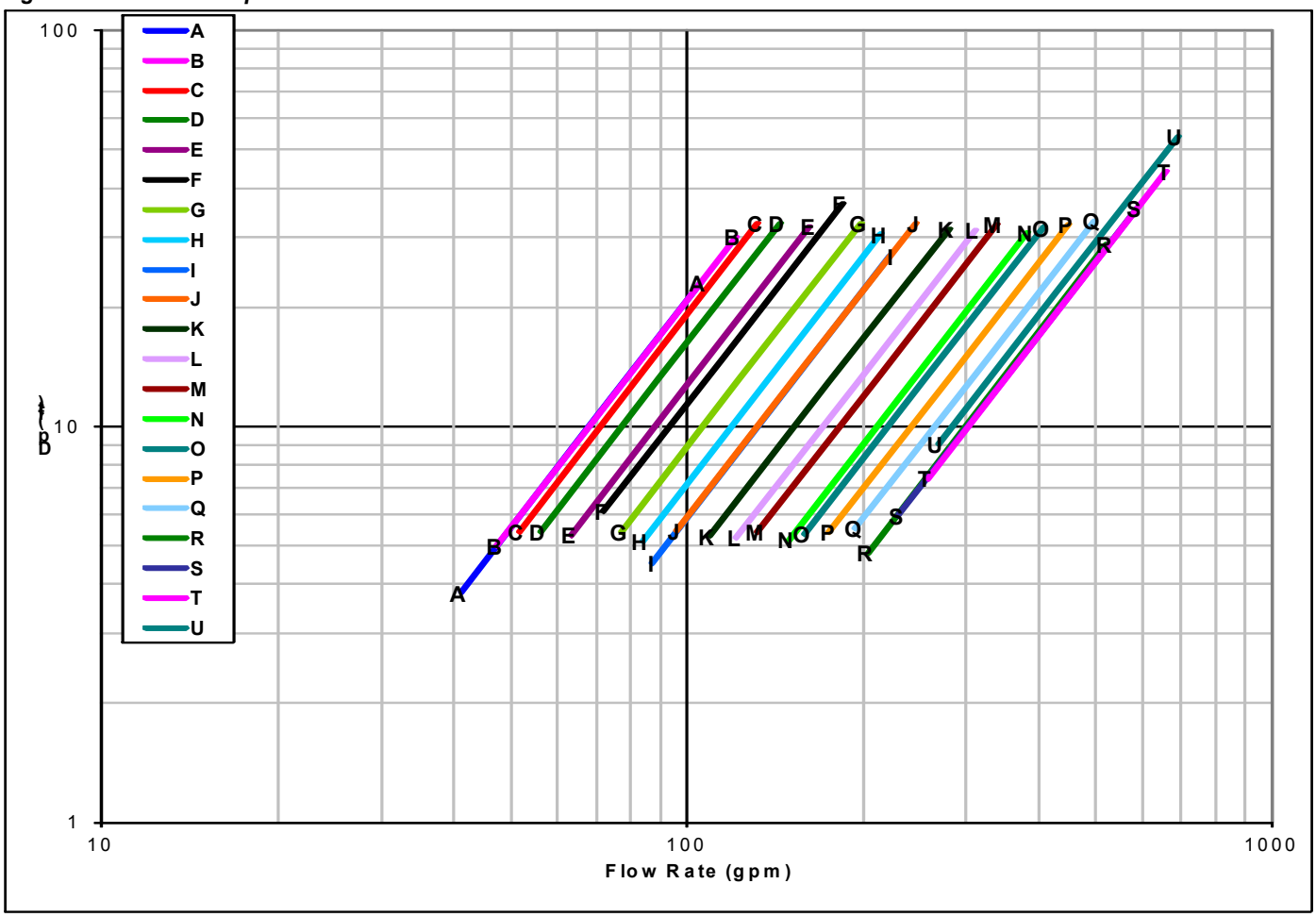


Table 4: Pressure Drop Data

Curve Ref.	Model	Evaporator Type	Minimum Flow Rate				Nominal Flow Rate				Maximum Flow Rate			
			IP		SI		IP		SI		IP		SI	
			gpm	DP ft.	lps	DP kpa	gpm	DP ft.	lps	DP kpa	gpm	DP ft.	lps	DP kpa
A	025D	Brazed Plate	41.3	3.8	2.6	11.5	66.0	9.4	4.2	28.1	105.6	23.0	6.7	68.6
B	030D		47.4	5.0	3.0	15.0	75.8	12.3	4.8	36.7	121.3	30.0	7.7	89.7
C	035D		51.8	5.4	3.3	16.3	82.8	13.3	5.2	39.7	132.5	32.5	8.4	97.0
D	040D		56.4	5.4	3.6	16.3	90.2	13.3	5.7	39.7	144.4	32.5	9.1	97.0
E	045D		63.5	5.3	4.0	15.9	101.5	13.0	6.4	38.8	162.4	31.8	10.2	94.8
F	050D		72.2	6.1	4.6	18.2	115.4	14.9	7.3	44.5	184.7	36.4	11.7	108.7
G	055D		77.4	5.4	4.9	16.3	123.8	13.3	7.8	39.7	198.1	32.5	12.5	97.0
H	060D		84.2	5.1	5.3	15.3	134.6	12.5	8.5	37.3	215.4	30.5	13.6	91.2
I	065D		87.2	4.5	5.5	13.4	139.4	11.0	8.8	32.8	223.1	26.9	14.1	80.2
J	070D		96.2	5.4	6.1	16.3	153.8	13.3	9.7	39.7	246.1	32.5	15.5	97.0
K	075D		109.7	5.3	6.9	15.8	175.4	12.9	11.1	38.5	280.7	31.5	17.7	94.1
L	080D		121.7	5.2	7.7	15.6	194.6	12.8	12.3	38.2	311.4	31.3	19.7	93.4
M	090D		132.3	5.4	8.3	16.1	211.7	13.2	13.4	39.4	338.7	32.2	21.4	96.3
N	100D		149.7	5.2	9.4	15.4	239.5	12.6	15.1	37.6	383.2	30.8	24.2	91.9
O	110D		159.2	5.3	10.0	15.9	254.6	13.0	16.1	38.8	407.4	31.8	25.7	94.8
P	125D		175.7	5.4	11.1	16.1	281.0	13.2	17.7	39.4	449.7	32.2	28.4	96.3
Q	130D		194.3	5.5	12.3	16.5	310.8	13.5	19.6	40.3	497.3	33.0	31.4	98.5
R	140D	Shell-and-Tube	204.3	4.8	12.9	14.4	326.9	11.8	20.6	35.2	523.0	28.8	33.0	86.1
S	160D		230.0	5.9	14.5	17.7	367.9	14.5	23.2	43.3	588.7	35.4	37.1	105.8
T	180D		258.3	7.4	16.3	22.0	413.3	18.0	26.1	53.7	661.2	44.0	41.7	131.3
U	190D		270.2	9.0	17.0	26.9	432.2	22.0	27.3	65.7	691.6	53.7	43.6	160.5

Installation Information

This section provides additional information on optional pump packages factory-mounted on Daikin Model AGZ-D (REV 0A) scroll compressor chillers. The current chiller installation, operating, and maintenance manuals are available at www.DaikinApplied.com.

Inspection

When the equipment is received, carefully check all items against the bill of lading to check for a complete shipment. Check all units for damage upon arrival. All shipping damage must be reported to the carrier and a claim must be filed with the carrier. Check the unit's serial plate before unloading the unit to be sure that it agrees with the power supply available. Physical damage to unit after acceptance is not the responsibility of Daikin Applied.

Note: Installation and maintenance are to be performed only by qualified personnel who are familiar with local codes and regulations, and experienced with this type of equipment.

Handling and Rigging

Follow the directions in IM 1100 for locating, handling and rigging the unit. The addition of the optional pump package does not change installation procedure. However, vibration isolator selection and location, lifting and operating weights, dimensions, and electrical data will differ from units without a pump package. Refer to dimension drawings for center-of-gravity locations.

Field Water Piping

Piping design must be provided by a qualified Architect or Systems HVAC Design Engineer familiar with piping design, as well as local codes and regulations. The manufacturer recommendations are to be used as a general guide, but do not replace system design by a qualified professional. All field piping, wiring, and procedures must be performed in accordance with ASHRAE, EPA, and industry standards.

Use best practice for piping design with a minimum number of bends and changes in elevation to keep system cost down and performance up. See AGZ-D installation manual, IM 1100, for general unit piping information.

The chilled water piping contains vent and drain connections as well as taps for inlet and outlet pressure gauges. Install a manual or automatic vent and a drain valve. Install a single, valved pressure gauge as shown in the chiller unit installation manual. The unit inlet and outlet connections are marked. It is prudent to double check the unit dimension drawing to confirm the connections.

The inlet guide and the outlet triple duty valve are shipped separately to protect them from shipping damage. Install on the unit and support as necessary. Support the chilled water piping independently from the unit.

Flush the system water piping thoroughly before making connections to the unit evaporator.

System Water Volume

It is important to have adequate water volume in the system to provide an opportunity for the chiller to sense a load change, adjust to the change and stabilize. As the expected load change becomes more rapid, a greater water volume is needed. The system water volume is the total amount of water in the evaporator, air handling products and associated piping. If the water volume is too low, operational problems can occur including rapid compressor cycling, rapid loading and unloading of compressors, erratic refrigerant flow in the chiller, improper motor cooling, shortened equipment life and other undesirable occurrences.

For normal comfort cooling where the cooling load changes relatively slowly, we recommend a minimum system volume in gallons of 2 to 3 times the flow rate (gpm). For example, if the design chiller flow rate is 350 gpm, we recommend a minimum system volume of 700 to 1050 gallons.

Since there are many other factors that can influence performance, systems can successfully operate below these suggestions. However, as the water volume decreases below these suggestions, the possibility of problems increases.

Freeze Protection

In installations where the unit is subject to sub-freezing temperatures, some method of preventing pipe and component freezing and subsequent damage is required. The pump will start on a signal from the chiller controller when either the chilled water leaving or entering temperature reaches the chiller freeze point setting to help prevent freeze up. If constant chilled water circulation is not possible or desired, one or more of the following procedures must be used:

- Drain the outdoor portion of the system and cap with a nitrogen charge.
- Heat trace all outdoor components.
- Add sufficient anti-freeze to prevent freezing.

Note: the evaporator is equipped with a water heater to help protect from freezing. This heater does not protect the pump package piping or components.

Adding of a concentration of a glycol anti-freeze with a freeze point 10°F below the lowest expected outdoor temperature will result in decreased capacity and increased pressure drop in the chiller. AGZ units are selected to provide the required capacity with the fluid specified when selected.

Temporary Strainer

The suction guide strainer contains a tempory strainer that must be removed after startup. See page 81 in the *Startup and Shutdown* section. for complete instructions.

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⚠ CAUTION

Do not use automotive grade antifreezes as it contains inhibitors harmful to chilled water systems.
Use only glycols designated for use in building cooling systems

Lifting Locations

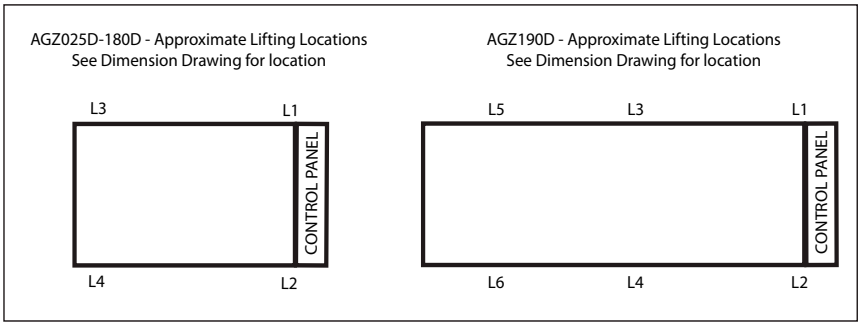


Table 5: Shipping and Lifting Weights

UNIT MODEL	SHIPPING WEIGHT				LIFTING WEIGHT BY CORNER (AL FIN COILS) (SEE NOTE FOR COPPER FIN COILS)											
	ALUMINUM FIN COILS		COPPER FIN COILS		L1		L2		L3		L4		L5		L6	
	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG
AGZ025D	4339	1968	4657	2112	1020	463	1106	502	1062	482	1151	522	-	-	-	-
AGZ030D	4371	1983	4689	2127	1038	471	1098	498	1086	493	1149	521	-	-	-	-
AGZ035D	4376	1985	4694	2129	1046	474	1093	496	1094	496	1143	518	-	-	-	-
AGZ040D	4456	2021	4990	2263	1053	478	1115	506	1111	504	1177	534	-	-	-	-
AGZ045D	4611	2092	5145	2334	1090	494	1155	524	1149	521	1218	552	-	-	-	-
AGZ050D	4686	2126	5220	2368	1113	505	1178	534	1164	528	1231	558	-	-	-	-
AGZ055D	4716	2139	5250	2381	1121	508	1187	538	1169	530	1239	562	-	-	-	-
AGZ060D	4836	2194	5370	2436	1148	521	1228	557	1189	539	1272	577	-	-	-	-
AGZ065D	4866	2207	5502	2496	1154	523	1241	563	1191	540	1281	581	-	-	-	-
AGZ070D	5276	2393	5912	2682	1292	586	1254	569	1385	628	1345	610	-	-	-	-
AGZ075D	6660	3021	7460	3384	1716	778	1611	731	1720	780	1614	732	-	-	-	-
AGZ080D	6750	3062	7550	3425	1757	797	1656	751	1718	779	1620	735	-	-	-	-
AGZ090D	6841	3103	7795	3536	1740	789	1635	742	1787	811	1679	762	-	-	-	-
AGZ100D	6965	3159	7919	3592	1794	814	1707	774	1775	805	1689	766	-	-	-	-
AGZ110D (208/230)	8574	3889	9646	4375	2322	1053	2330	1057	1958	888	1964	891	-	-	-	-
AGZ125D (208/230)	8799	3991	10075	4570	2411	1094	2383	1081	2015	914	1991	903	-	-	-	-
AGZ130D (208/230)	8934	4052	10210	4631	2455	1114	2489	1129	1982	899	2009	911	-	-	-	-
AGZ110D (460/575)	8514	3862	9586	4348	2283	1036	2282	1035	1975	896	1974	895	-	-	-	-
AGZ125D (460/575)	8739	3964	10015	4543	2369	1075	2332	1058	2034	923	2003	909	-	-	-	-
AGZ130D (460/575)	8874	4025	10150	4604	2414	1095	2438	1106	2001	908	2021	917	-	-	-	-
AGZ140D	11147	5056	12743	5780	2636	1196	2767	1255	1698	770	1783	809	1103	500	1158	525
AGZ160D	11297	5124	12893	5848	2716	1232	2803	1271	1734	787	1789	811	1110	503	1146	520
AGZ180D	11462	5199	13058	5923	2769	1256	2903	1317	1740	789	1824	827	1087	493	1140	517
AGZ190D	12308	5583	14223	6451	2032	922	2104	954	2017	915	2089	948	1997	906	2069	938

NOTE: To calculate corner lifting weights for AGZ 025D-130D (4 lifting points) units with copper fin coils add 1/4 of the copper vs. aluminum shipping weight to each aluminum corner lifting weight. To calculate corner lifting weights for AGZ 140D-190D (6 lifting points) units with copper fin coils add 1/6 of the copper vs. aluminum shipping weight to each aluminum corner lifting weight.

Unit Weights

Operating Weights & Vibration Isolators

Vibration isolators are recommended for all roof-mounted installations or wherever vibration transmission is a consideration. Initially install the unit on shims or blocks at the "free height" of the isolator. When all piping, wiring, flushing, charging, etc. is complete, adjust the springs upward to load them and to provide clearance to free the blocks, which are then removed.

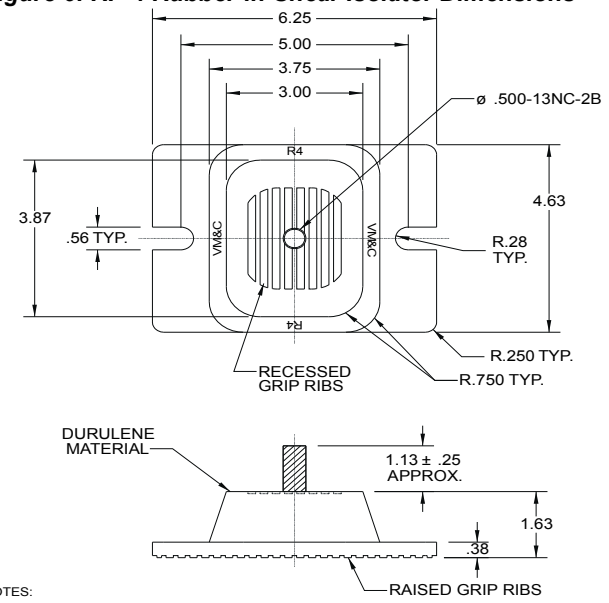
Installation of spring isolators requires flexible pipe connections and at least three feet of conduit flex tie-ins. Support piping and conduit independently from the unit to not stress connections. Mounting locations are on the unit dimension drawings beginning on page 23. Isolator selections are different for AGZ-D units with a pump package than those without one.

Table 6: Operating and Mounting Weights

UNIT MODEL	OPERATING WEIGHT				MOUNTING WEIGHT BY LOCATION (AL FIN COILS) (SEE NOTE FOR COPPER FIN COILS)															
	ALUMINUM FIN COILS		COPPER FIN COILS		M1		M2		M3		M4		M5		M6		M7		M8	
	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG
AGZ025D	4404	1998	4722	2142	1040	472	1127	511	1074	487	1164	528	-	-	-	-	-	-	-	-
AGZ030D	4436	2012	4754	2156	1058	480	1120	508	1097	498	1161	527	-	-	-	-	-	-	-	-
AGZ035D	4446	2017	4764	2161	1067	484	1116	506	1106	502	1157	525	-	-	-	-	-	-	-	-
AGZ040D	4526	2053	5060	2295	1075	488	1138	516	1123	509	1189	539	-	-	-	-	-	-	-	-
AGZ045D	4686	2126	5220	2368	1113	505	1180	535	1162	527	1231	558	-	-	-	-	-	-	-	-
AGZ050D	4766	2162	5300	2404	1137	516	1203	546	1178	534	1247	566	-	-	-	-	-	-	-	-
AGZ055D	4796	2175	5330	2418	1144	519	1212	550	1184	537	1255	569	-	-	-	-	-	-	-	-
AGZ060D	4921	2232	5455	2474	1172	532	1254	569	1206	547	1290	585	-	-	-	-	-	-	-	-
AGZ065D	4956	2248	5592	2536	1179	535	1268	575	1209	548	1300	590	-	-	-	-	-	-	-	-
AGZ070D	5366	2434	6002	2722	1323	600	1285	583	1400	635	1359	616	-	-	-	-	-	-	-	-
AGZ080D	6850	3107	7650	3470	1854	841	1748	793	1672	758	1576	715	-	-	-	-	-	-	-	-
AGZ090D	6945	3150	7899	3583	1850	839	1738	788	1731	785	1626	738	-	-	-	-	-	-	-	-
AGZ100D	7080	3211	8034	3644	1900	862	1808	820	1728	784	1644	746	-	-	-	-	-	-	-	-
AGZ110D (208/230)	8694	3944	9766	4430	1412	640	1416	642	1447	656	1451	658	1482	672	1486	674	-	-	-	-
AGZ125D (208/230)	8929	4050	10205	4629	1470	667	1453	659	1497	679	1479	671	1524	691	1506	683	-	-	-	-
AGZ130D (208/230)	9074	4116	10350	4695	1510	685	1531	694	1502	681	1523	691	1494	678	1514	687	-	-	-	-
AGZ110D (460/575)	8634	3916	9706	4403	1379	626	1378	625	1439	653	1439	653	1500	680	1499	680	-	-	-	-
AGZ125D (460/575)	8869	4023	10145	4602	1435	651	1413	641	1490	676	1467	665	1545	701	1521	690	-	-	-	-
AGZ130D (460/575)	9014	4089	10290	4667	1476	670	1491	676	1495	678	1510	685	1513	686	1528	693	-	-	-	-
AGZ140D	11929	5411	13525	6135	1636	742	1717	779	1524	691	1600	726	1390	630	1459	662	1270	576	1333	605
AGZ160D	12079	5479	13675	6203	1690	767	1744	791	1564	709	1614	732	1413	641	1458	661	1278	580	1319	598
AGZ180D	12244	5554	13840	6278	1731	785	1815	823	1585	719	1661	753	1409	639	1478	670	1252	568	1313	596
AGZ190D	13093	5939	15008	6808	1719	780	1780	807	1650	748	1709	775	1577	715	1633	741	1486	674	1539	698

NOTE: For AGZ025-100D (4 mounting points): to calculate corner mounting weights for units with copper fin coils add 1/4 of the copper vs. aluminum operating weight to each aluminum mounting weight. For AGZ110-130D (6 mounting points):: to calculate corner mounting weights for units with copper fin coils add 1/6 of the copper vs. aluminum operating weight to each aluminum mounting weight. For AGZ140-190D (8 Mounting Points): to calculate corner mounting weights for units with copper fin coils add 1/8 of the copper vs. aluminum operating weight to each aluminum mounting weight.

Figure 6: RP-4 Rubber-in-Shear Isolator Dimensions



NOTES:

1. MOUNT MATERIAL TO BE DURULENE RUBBER.
2. MOLDED STEEL AND ELASTOMER MOUNT FOR OUTDOOR SERVICE CONDITIONS.
3. RP-4 MOUNT VERSION WITH STUD IN PLACE.

DRAWING NUMBER 3314814

ALL DIMENSIONS ARE IN DECIMAL INCHES

Table 7: Rubber-in-Shear Isolator Locations, Aluminum Fin Coils

AGZ-D Unit Size	RUBBER IN SHEAR ISOLATORS - ALUMINUM FIN COILS								Kit Number
	M1	M2	M3	M4	M5	M6	M7	M8	
025, 030, 035, 040, 045, 050	RP-4 Brown	RP-4 Brown	RP-4 Brown	RP-4 Brown					332325107
075, 080, 090, 100	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red					332325108
110, 125, 130	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red			332325109
140, 160, 180, 190	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	332325110

Table 8: Rubber-in-Shear Isolator Locations, Copper Fin Coils

AGZ-D Unit Size	RUBBER IN SHEAR ISOLATORS - Copper FIN COILS								Kit Number
	M1	M2	M3	M4	M5	M6	M7	M8	
025, 030, 035, 040, 045, 050	RP-4 Brown	RP-4 Brown	RP-4 Brown	RP-4 Brown					332325107
055. 060, 065, 070	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red					332325108
075, 080, 090, 100	RP-4 Lime	RP-4 Lime	RP-4 Lime	RP-4 Lime					332325111
110, 125, 130	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red			332325109
140, 160, 180	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	RP-4 Brick Red	332325110
190	RP-4 Lime	RP-4 Lime	RP-4 Lime	RP-4 Lime	RP-4 Lime	RP-4 Lime	RP-4 Lime	RP-4 Lime	332325111

Figure 7: C2P

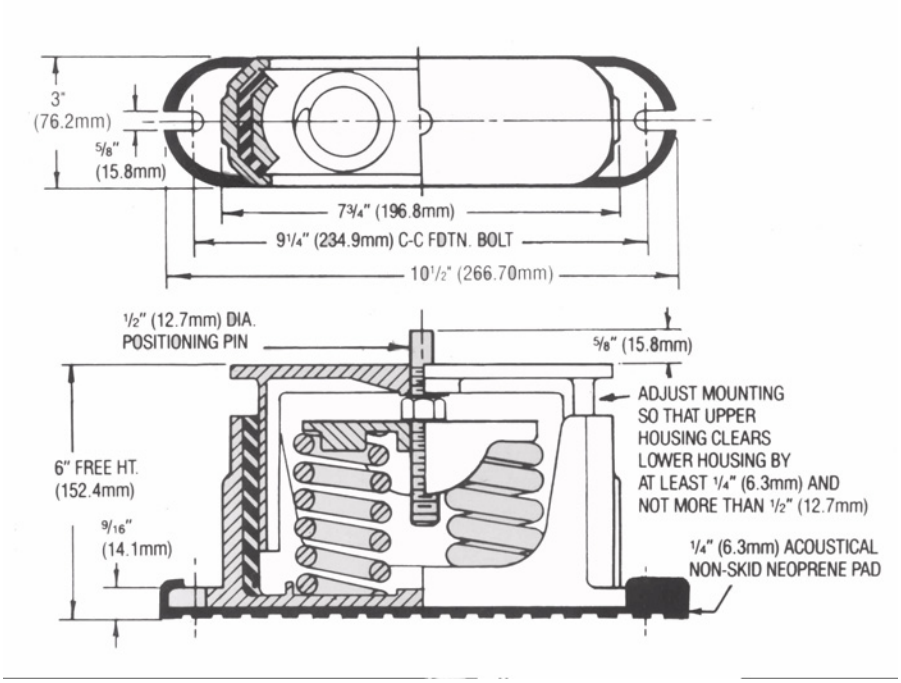


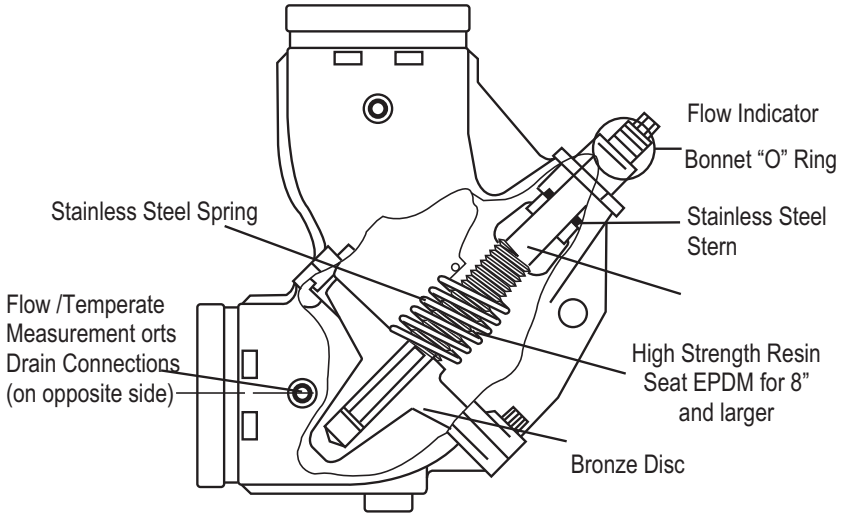
Table 9: Spring Isolator Locations, Aluminum Fin Coils

AGZ-D Unit Size	SPRING-FLEX ISOLATORS - ALUMINUM FIN COILS								Kit Number
	M1	M2	M3	M4	M5	M6	M7	M8	
025, 030, 035, 040	C2PE-1D-1350 Purple	C2PE-1D-1350 Purple	C2PE-1D-1350 Purple	C2PE-1D-1350 Purple					332320116
060, 065, 070	C2PE-1D-1800 Green	C2PE-1D-1800 Green	C2PE-1D-1800 Green	C2PE-1D-1800 Green					332320117
075, 080, 090, 100	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-1800 Green	C2PE-1D-1800 Green					332320118
110, 125, 130	C2PE-1D-1800 Green	C2PE-1D-1800 Green	C2PE-1D-1800 Green	C2PE-1D-1800 Green	C2PE-1D-1800 Green	C2PE-1D-1800 Green			332320119
140, 160, 180, 190	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	332320120

Table 10: Spring Isolator Locations, Copper Fin Coils

AGZ-D Unit Size	SPRING-FLEX ISOLATORS								Kit Number
	M1	M2	M3	M4	M5	M6	M7	M8	
025, 030, 035, 040	C2PE-1D-1350 Purple	C2PE-1D-1350 Purple	C2PE-1D-1350 Purple	C2PE-1D-1350 Purple					332320116
045, 050, 055 060, 065, 070	C2PE-1D-1800 Green	C2PE-1D-1800 Green	C2PE-1D-1800 Green	C2PE-1D-1800 Green					332320117
075, 080, 090, 100	C2PE-1D-2720 White	C2PE-1D-2720 White	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray					332320121
110, 125, 130	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray			332320122
140, 160, 180, 190	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	C2PE-1D-2400 Gray	332320120

Figure 8: Triple Duty Discharge Valve Diagram


Flow Indicator
Bonnet "O" Ring
Stainless Steel Spring
Stainless Steel Stern
Flow /Temperate Measurement orts Drain Connections (on opposite side)
High Strength Resin Seat EPDM for 8" and larger
Bronze Disc

Determining Flow Rate - Valve In Full Open Position

Measure and record the differential pressure across the valve using a CBDM- 135/60 meter, or pressure gauges with PMP adapters.

⚠ CAUTION

Safety glasses should be used and the probe should not be left inserted into fittings for prolonged periods of time as leakage from the PMP may occur when probe is removed.

Locate Pressure Differential on left hand side of Performance Curve (Figure 9) and extend line horizontally across to valve size being used. Drop line vertically down and read flow rate from bottom of chart.

Determining Flow Rate - Valve In Throttled Position

Record the size of the valve and stem position using the Flow Indicator Scale. Calculate percentage of valve opening referring to table below:

Table 11: *Valve Size and Number of Rings*

Valve Size	2 1/2	3	4	5	6	8	10	12
Number of Rings (valve full open)	5	5	6	9	10	12	18	28

Measure and record the differential pressure across the valve in the throttled position. Project a line vertically up to intersect with the Valve Curve and from this point project line horizontally across to the left of the chart and record the percentage of maximum flow rate.

On the Performance Curve (Figure 9) locate the differential pressure obtained above and project a line horizontally across to intercept with Valve Performance Curve. Drop a line vertically down to read the flow rate at the bottom of the chart.

To calculate flow rate of valve in the throttled position, multiply the flow rate by the percentage flow rate divided by 100.

Example:

- Valve size 4 inch.
- Differential Pressure is 5.4 ft. (1.65 m).
- Number of rings open = 3. Therefore: 3 rings ÷ 6 rings x 100 = 50% throttled.

From the Performance Curve (Figure 9), a 4 inch, valve with 5.4 ft. pressure drop (1.65 m) represents a flow of 400 USgpm (25.2 l/s).
From Flow Characteristic Curve (Figure 10)., a 4 inch valve 50% open, represents 34% of maximum flow.
Approximate flow of a 4 inch valve, with a 5.4 ft. (1.65 m) pressure drop when 50% throttled is:
400 x 34/100 = 136USgpm
or in metric, 25.2 x 34100 = 8.57l/s

Note: To prevent premature valve failure it is not recommended that the valve operate in the throttled position with more than 25 ft. pressure differential. Instead the pump impeller should be trimmed or valves located elsewhere in the system be used to partially throttle the flow.

Flow Indicator Scale

The valve stem with its grooved rings and positioning sleeve indicates the throttled position of the valve. The quarter turn graduations on the sleeve, with the scribed line on the stem provides for approximate flow measurement.

Note: The valve is shipped in the closed position. The indicator on the plastic sleeve is aligned with the vertical scribed line on the stem.

Figure 9: Performance Curve - Valve in Full Open Position

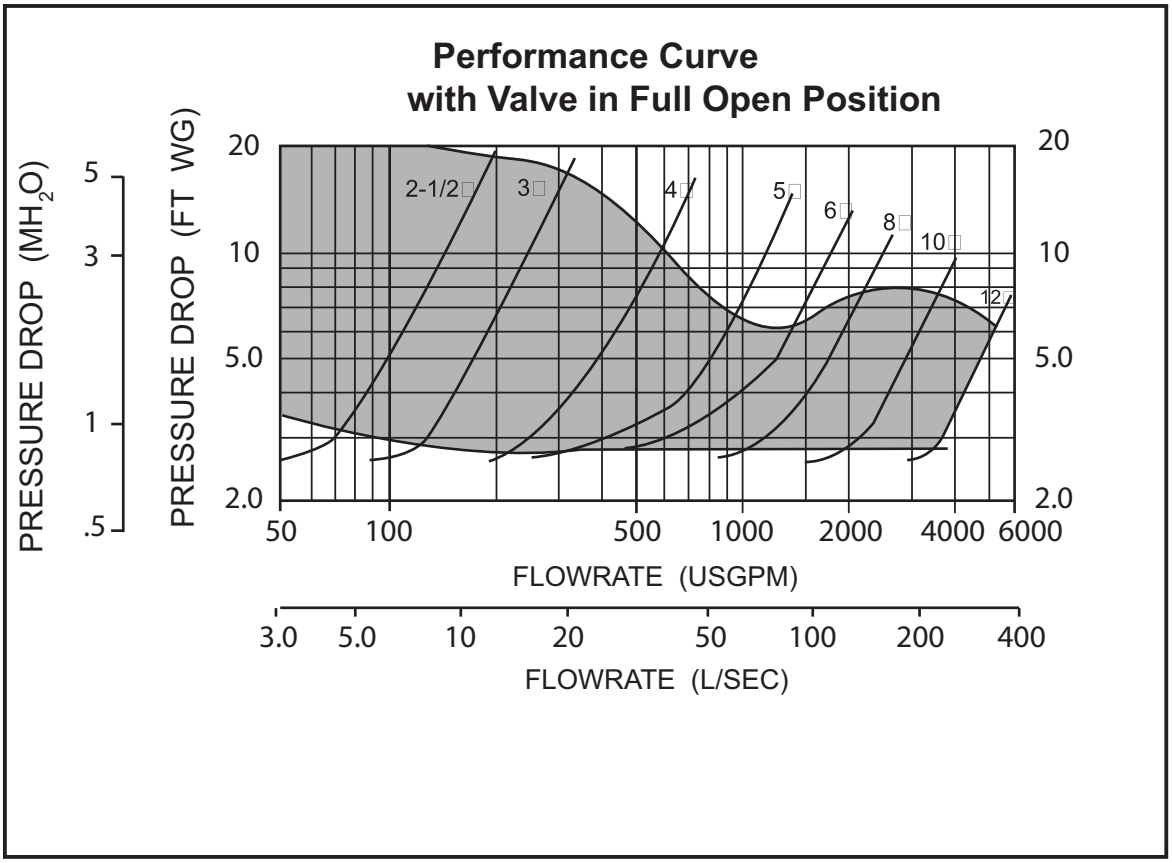


Figure 10: Flow Characteristic Curve - Valve in Throttled Position

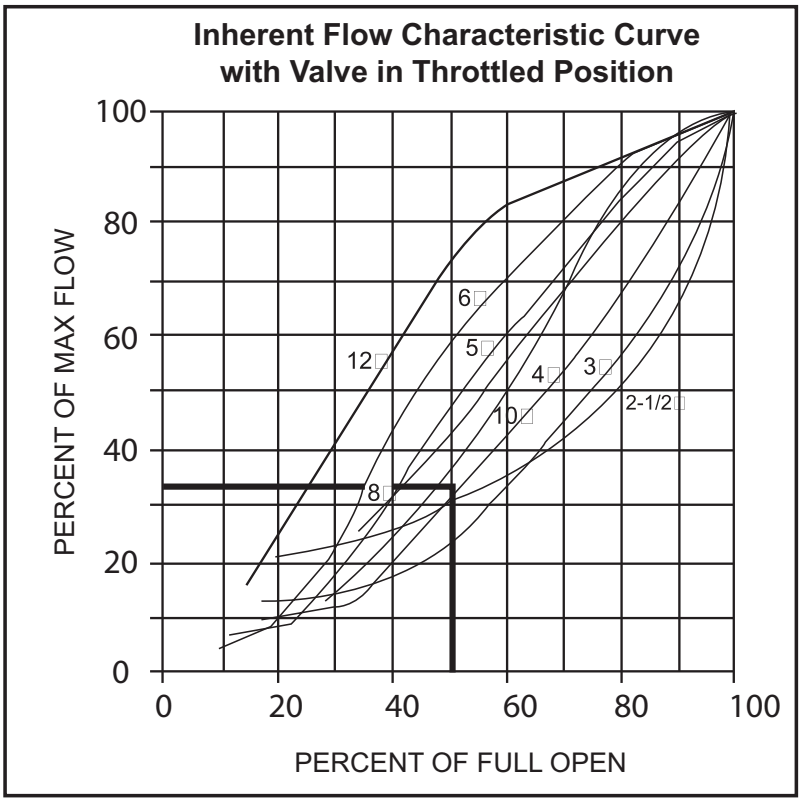
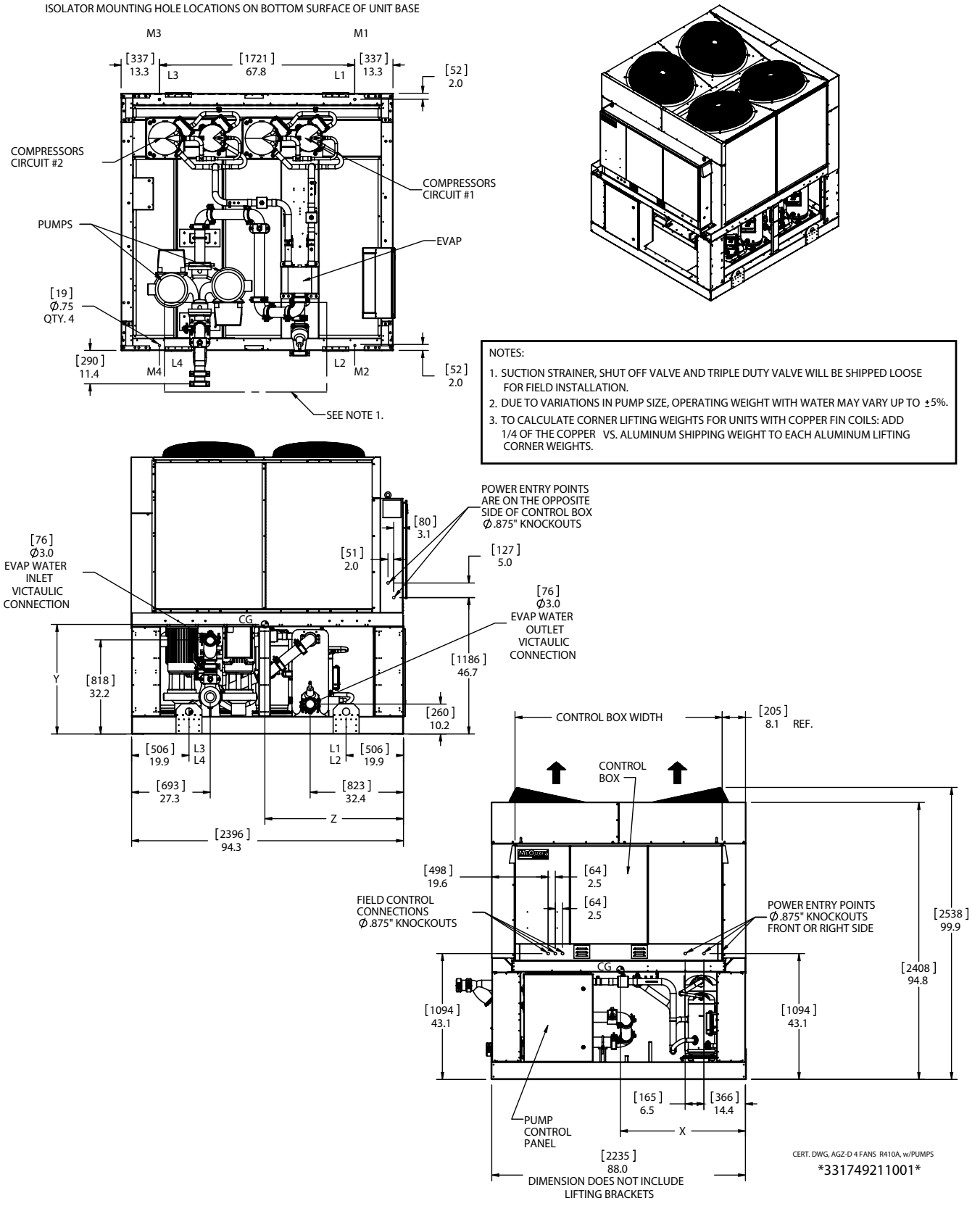


Figure 11: AGZ025D - AGZ070D with Pump Package (COG dimensions on page 29)



Dimensions

Figure 12: AGZ075D - AGZ080D with Pump Package (COG dimensions on page 29)

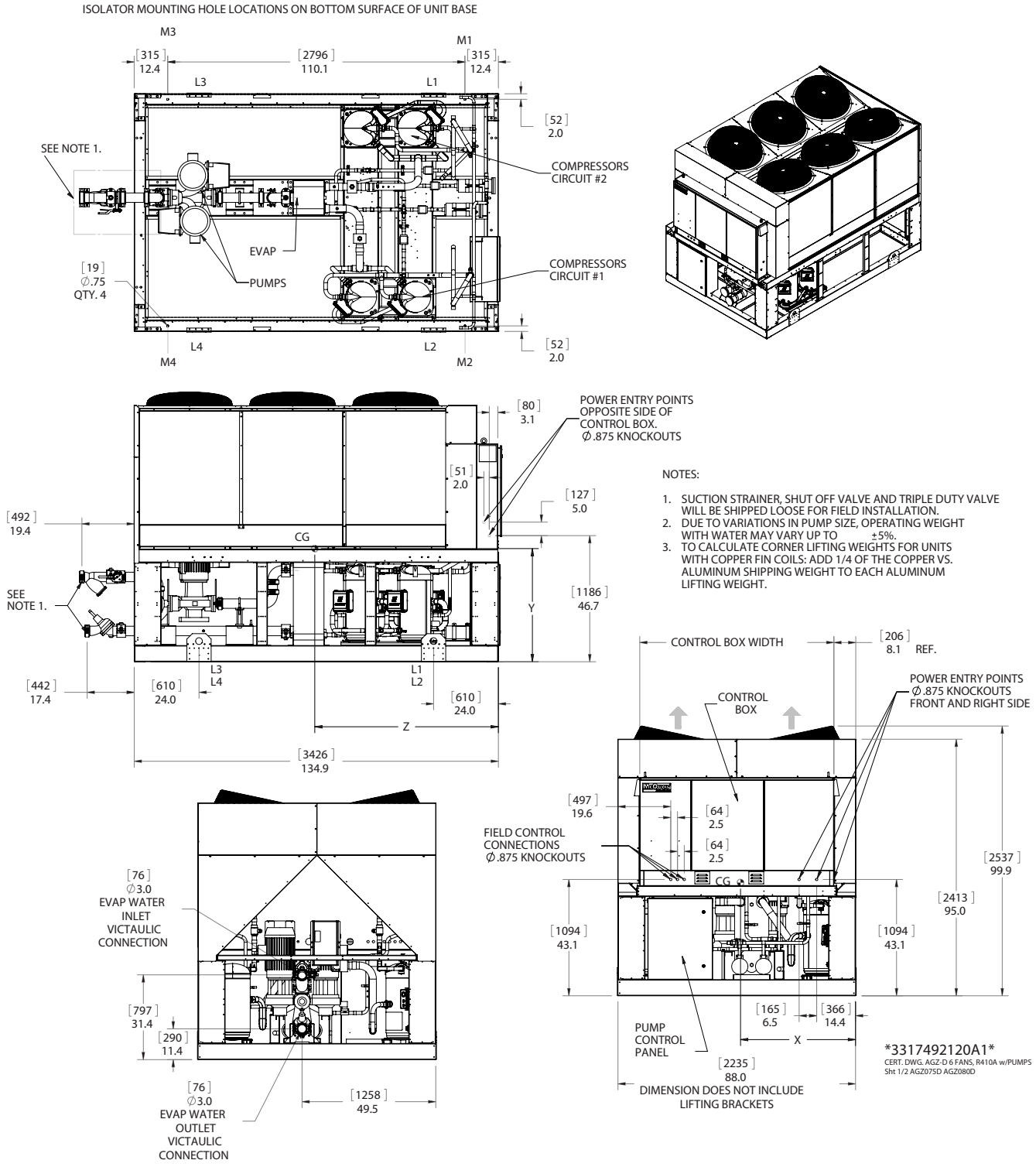


Figure 13: AGZ090D - AGZ100D with Pump Package (COG dimensions on page 29)

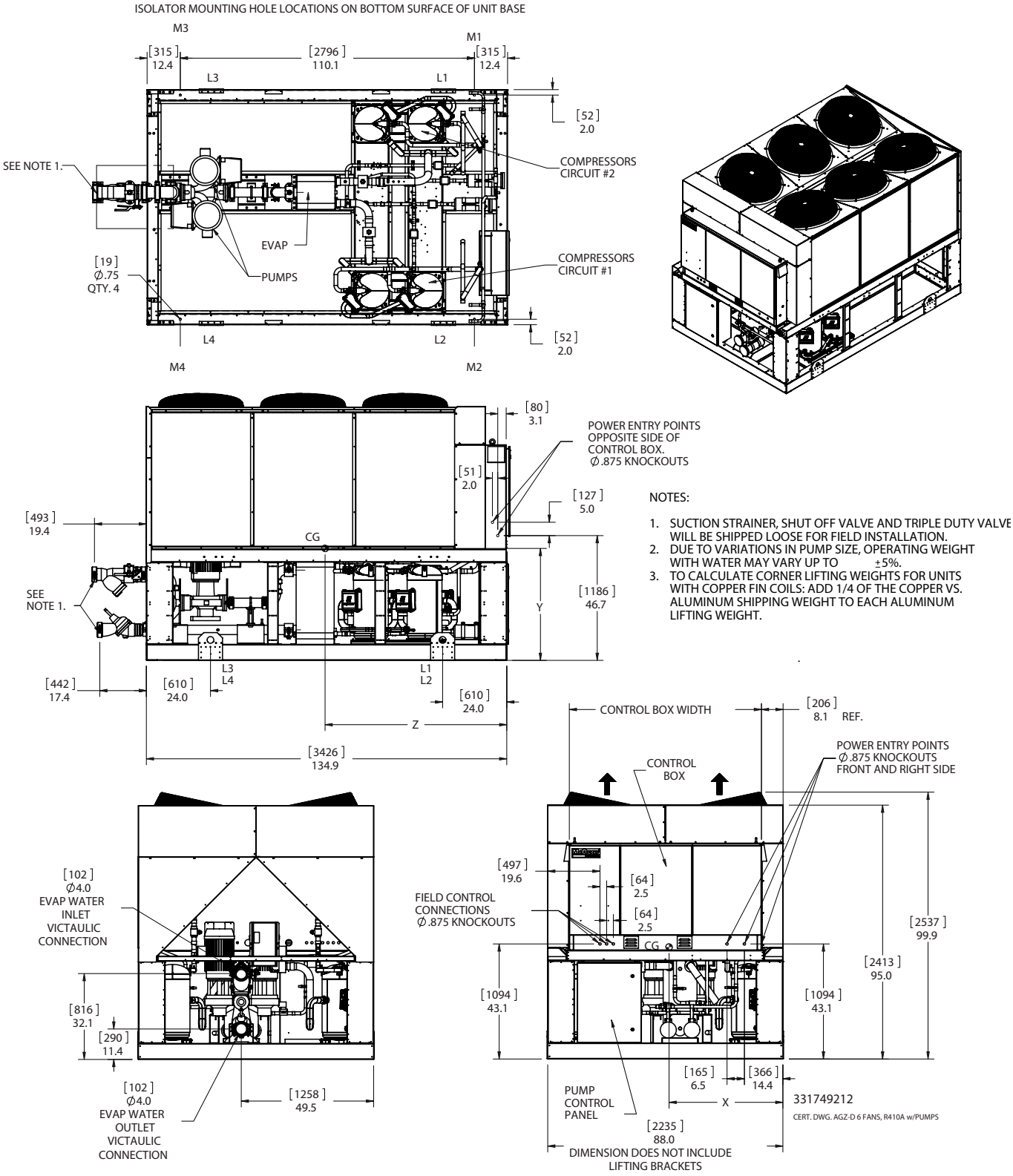


Figure 14: AGZ110D - AGZ130D with Pump Package (COG dimensions on page 29)

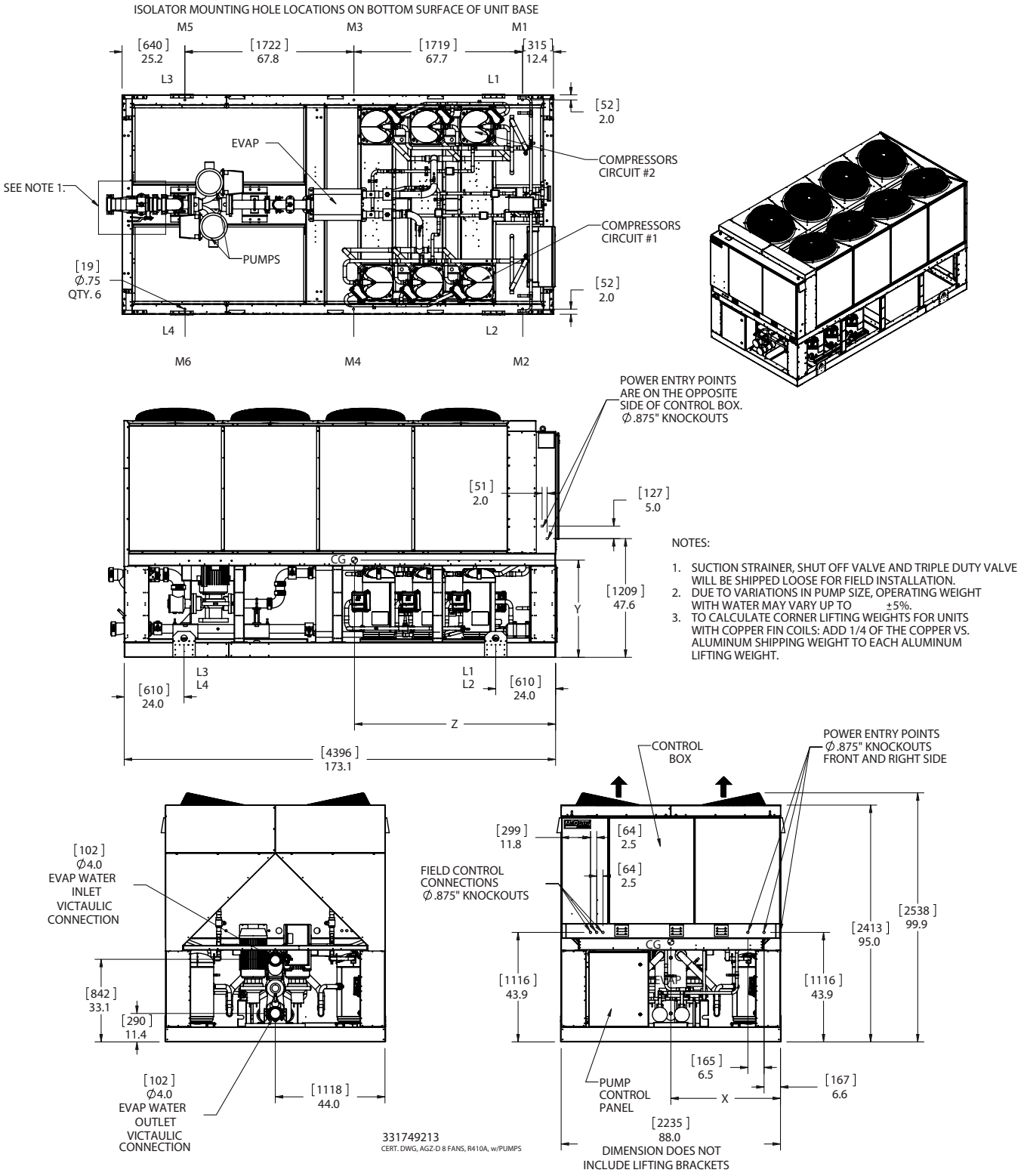


Figure 15: AGZ140D - AGZ180D with Pump Package (COG dimensions on page 29)

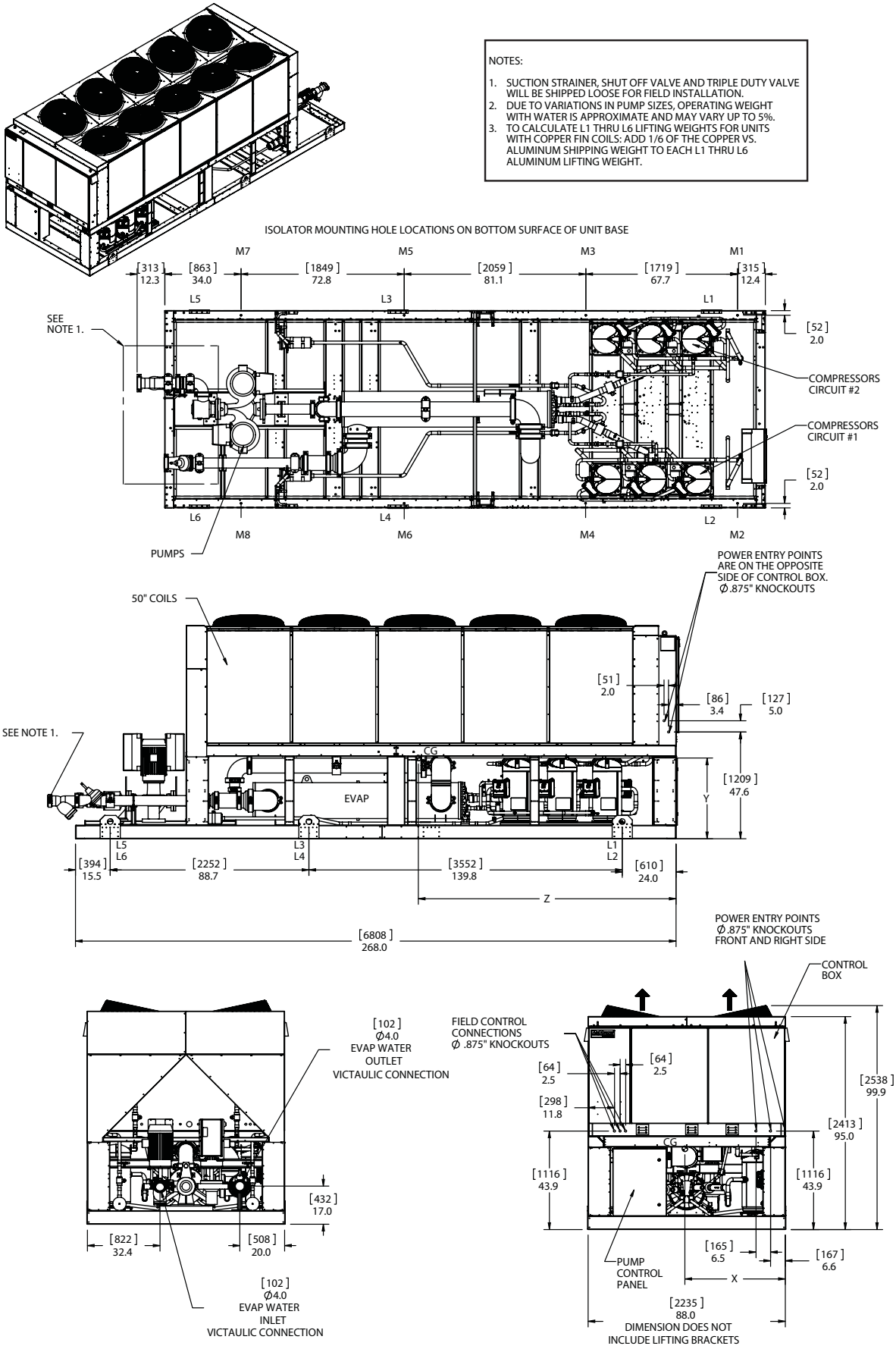
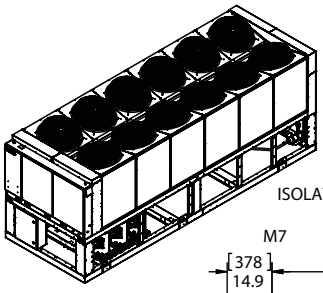


Figure 16: AGZ190D with Pump Package (COG dimensions on page 29)



NOTES:

1. SUCTION STRAINER, SHUT OFF VALVE AND TRIPLE DUTY VALVE WILL BE SHIPPED LOOSE FOR FIELD INSTALLATION.
2. DUE TO VARIATIONS IN PUMP SIZES, OPERATING WEIGHT WITH WATER IS APPROXIMATE AND MAY VARY UP TO 5%.
3. TO CALCULATE L1 THRU L6 LIFTING WEIGHTS FOR UNITS WITH COPPER FIN COILS: ADD 1/6 OF THE COPPER VS. ALUMINUM SHIPPING WEIGHT TO EACH L1 THRU L6 ALUMINUM LIFTING WEIGHT.

ISOLATOR MOUNTING HOLE LOCATIONS ON BOTTOM SURFACE OF UNIT BASE

M7 [378] 14.9 | M5 [2286] 90.0 | M3 [1826] 71.9 | M1 [1719] 67.7 | [315] 12.4

L5 L3 L1

[19] Ø.75 QTY. 8

SEE NOTE 1.

[52] 2.0

COMPRESSORS CIRCUIT #2

COMPRESSORS CIRCUIT #1

[52] 2.0

L6 L4 L2

M8 PUMPS M6 M4 M2

POWER ENTRY POINTS ARE ON THE OPPOSITE SIDE OF CONTROL BOX. Ø.875" KNOCKOUTS

50" COILS

[86] 3.4

[51] 2.0

[127] 5.0

CG

EVAP

Y [1209] 47.6

L5 L6 | L3 L4 | L1 L2

[948] 37.3 | [2801] 110.3 | [2165] 85.2 | [610] 24.0

Z

[6524] 256.9

CONTROL BOX

POWER ENTRY POINTS Ø.875" KNOCKOUTS FRONT AND RIGHT SIDE

[299] 11.8

FIELD CONTROL CONNECTIONS Ø.875" KNOCKOUTS

[64] 2.5

[64] 2.5

[2538] 99.9

[2413] 95.0

CG

[1116] 43.9

[1116] 43.9

[102] Ø4.0 EVAP WATER INLET VICTAULIC CONNECTION

[432] 17.0

[629] 24.7

[765] 30.1

[102] Ø4.0 EVAP WATER OUTLET VICTAULIC CONNECTION

[165] 6.5

[167] 6.6

PUMP CONTROL PANEL

X

[2235] 88.0

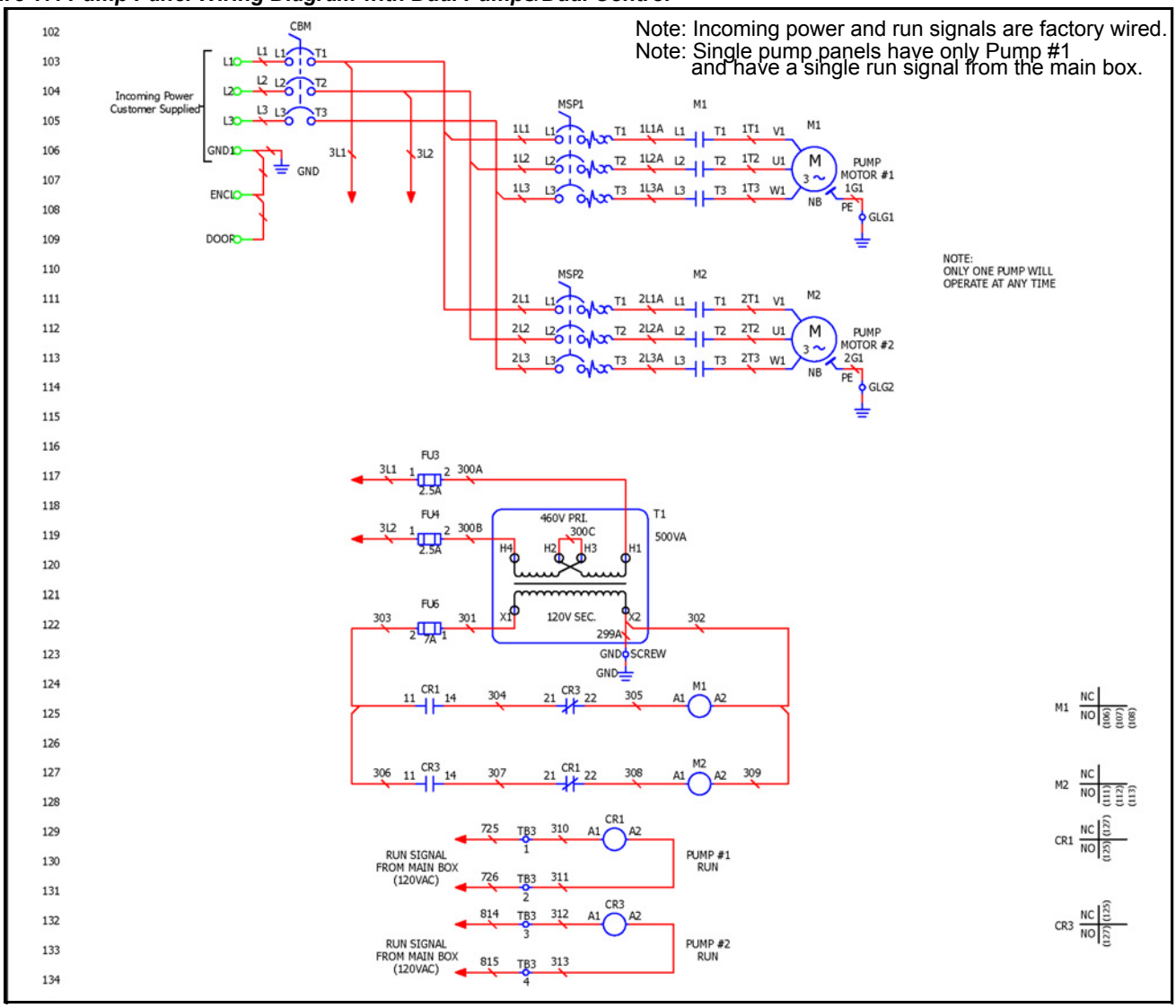
DIMENSION DOES NOT INCLUDE LIFTING BRACKETS

331749215D0100
AGZD 12 FAN W PUMPS

Table 12: Center of Gravity Dimensions

UNIT MODEL	CENTER OF GRAVITY (COG) LOCATION					
	X		Y		Z	
	IN	MM	IN	MM	IN	MM
AGZ025D	45.8	1163	38.6	980	47.7	1212
AGZ030D	45.3	1151	38.3	973	47.8	1214
AGZ035D	45.0	1143	38.1	968	47.8	1214
AGZ040D	45.3	1151	38.7	983	47.9	1217
AGZ045D	45.3	1151	39.6	1006	47.9	1217
AGZ050D	45.2	1148	39.7	1008	47.8	1214
AGZ055D	45.3	1151	39.6	1006	47.7	1212
AGZ060D	45.5	1156	39.6	1006	47.6	1209
AGZ065D	45.6	1158	39.5	1003	47.6	1209
AGZ070D	43.4	1102	37.5	953	48.1	1222
AGZ075D	42.6	1082	40.7	1715	67.5	1715
AGZ080D	42.7	1085	40.5	1702	67.0	1702
AGZ090D	42.6	1082	41.9	1727	68.0	1727
AGZ100D	42.9	1090	41.5	1707	67.2	1707
AGZ110D (208/230)	44.1	1120	40.6	1031	81.2	2062
AGZ125D (208/230)	43.7	1110	39.9	1013	81.0	2057
AGZ130D (208/230)	44.3	1125	39.1	993	79.9	2029
AGZ110D (460/575)	44.0	1118	40.0	1016	82.0	2083
AGZ125D (460/575)	43.7	1110	39.4	1001	81.8	2078
AGZ130D (460/575)	44.2	1123	38.6	980	80.7	2050
AGZ140D	45.1	1146	37.4	950	114.0	2896
AGZ160D	44.7	1135	37.2	945	113.2	2875
AGZ180D	45.0	1143	37.1	942	111.9	2842
AGZ190D	44.8	1138	39.0	991	117.0	2972

Figure 17: Pump Panel Wiring Diagram with Dual Pumps/Dual Control



Power Wiring

As standard, power to the pump package control panel is factory wired from the chiller electrical panel. When the optional chiller multi-point power wiring is specified, the pump power originates from power circuit #1.

There is an option for field power wiring the pumps in lieu of factory wiring. In this case the necessary electrical data begins in Table 11 on page 40. In all cases, field power wiring connections are made to L1, L2, L3 and GND on the pump panel circuit breaker.

Power wiring to the chiller unit will be as shown in the chiller catalog and installation manual.

Control Wiring

Control wiring to the chiller unit will be as shown in the chiller catalog and installation manual except that the flow switch and pump output signals shown as field wiring will be factory wired.

Control wiring to start and stop the pump(s) is always factory wired from the chiller electric panel to the pump package. Dual pumps have two output signals and single pumps have one.

The pump panel schematic, Figure 28, shows the standard dual pump arrangement. Optionally a VFD can be substituted for the contacts shown. A VFD line reactor can also be added.

A single pump can be ordered, in which case only one run signal is factory wired in.

VFD Option, the VFD will require field wiring if the optional BAS control is used or if the VFD is wired to field-mounted differential switches. The pump BAS protocol will be the same as specified for the chiller unit. The standard sensorless arrangement does not require field wiring.

For BAS connection, use RS485 and wire to terminals 68 (+) and 69 (-) for Modbus, FLN or Metasys protocols. The terminals are located in the lower-right corner of the pump-mounted VFD enclosure under the keypad.

Table 13: Electrical Data - Single Point

Model	Voltage	Pump		Ratings			Lug Range	
		HP	FLA	MCA	RFS	MFS	Power Block (1)	Disconnect Switch (1)
AGZ025D PUMP	208V	1.0	4.6	154	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	230V		4.2	153	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	460V		2.1	76	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		1.7	66	70	70	(1) 2/0 - #14	(1) 1/0 - #14
	208V	1.5	6.6	156	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	230V		6.0	155	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	460V		3.0	77	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.4	67	70	70	(1) 2/0 - #14	(1) 1/0 - #14
	208V	2.0	7.5	157	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	230V		6.8	156	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	460V		3.4	78	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.7	67	70	70	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	160	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	230V		9.6	159	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	460V		4.8	79	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		3.9	68	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	166	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	230V		15.2	164	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	460V		7.6	82	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		6.1	70	80	80	(1) 2/0 - #14	(1) 1/0 - #14
AGZ030D PUMP	208V	1.0	4.6	163	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	230V		4.2	156	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	460V		2.1	85	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		1.7	69	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	1.5	6.6	165	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	230V		6.0	158	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	460V		3.0	86	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.4	70	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	2.0	7.5	165	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	230V		6.8	158	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	460V		3.4	86	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.7	70	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	169	175	175	(1) 600 - #2	(2) 300 - 1/0
	230V		9.6	161	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	460V		4.8	87	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		3.9	72	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	175	200	200	(1) 600 - #2	(2) 300 - 1/0
	230V		15.2	167	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	460V		7.6	90	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		6.1	74	80	80	(1) 2/0 - #14	(1) 1/0 - #14
AGZ035D PUMP	208V	1.5	6.6	175	200	200	(1) 600 - #2	(2) 300 - 1/0
	230V		6.0	171	200	200	(1) 600 - #2	(2) 300 - 1/0
	460V		3.0	88	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.4	70	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	2.0	7.5	176	200	200	(1) 600 - #2	(2) 300 - 1/0
	230V		6.8	172	200	200	(1) 600 - #2	(2) 300 - 1/0
	460V		3.4	89	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.7	70	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	179	200	200	(1) 600 - #2	(2) 300 - 1/0
	230V		9.6	174	200	200	(1) 600 - #2	(2) 300 - 1/0
	460V		4.8	90	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		3.9	72	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	185	200	200	(1) 600 - #2	(2) 300 - 1/0
	230V		15.2	180	200	200	(1) 600 - #2	(2) 300 - 1/0
	460V		7.6	93	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	575V		6.1	74	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	7.5	24.2	193	225	225	(1) 600 - #2	(2) 300 - 1/0
	230V		22.0	187	200	200	(1) 600 - #2	(2) 300 - 1/0
	460V		11.0	96	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	575V		9.0	77	80	80	(1) 2/0 - #14	(1) 1/0 - #14

Note: Power block and disconnect switch sizes are minimums. Larger sizes may be used, however the lug range must be the same.

Table 14: Electrical Data - Single Point (Continued)

Model	Voltage	Pump		Ratings			Lug Range	
		HP	FLA	MCA	RFS	MFS	Power Block (1)	Disconnect Switch (1)
AGZ040D PUMP	208V	1.5	6.6	185	200	200	(1) 600 - #2	(2) 300 - 1/0
	230V		6.0	183	200	200	(1) 600 - #2	(2) 300 - 1/0
	460V		3.0	91	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.4	70	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	2.0	7.5	185	200	200	(1) 600 - #2	(2) 300 - 1/0
	230V		6.8	183	200	200	(1) 600 - #2	(2) 300 - 1/0
	460V		3.4	91	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.7	70	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	189	200	200	(1) 600 - #2	(2) 300 - 1/0
	230V		9.6	186	200	200	(1) 600 - #2	(2) 300 - 1/0
	460V		4.8	93	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	575V		3.9	72	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	195	225	225	(1) 600 - #2	(2) 300 - 1/0
	230V		15.2	192	225	225	(1) 600 - #2	(2) 300 - 1/0
	460V		7.6	95	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	575V		6.1	74	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	7.5	24.2	202	225	225	(1) 600 - #2	(2) 300 - 1/0
	230V		22.0	199	225	225	(1) 600 - #2	(2) 300 - 1/0
	460V		11.0	99	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	575V		9.0	77	80	80	(1) 2/0 - #14	(1) 1/0 - #14
AGZ045D PUMP	208V	1.5	6.6	235	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		6.0	234	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		3.0	95	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	575V		2.4	79	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	208V	2.0	7.5	236	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		6.8	235	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		3.4	95	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	575V		2.7	79	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	239	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		9.6	238	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		4.8	97	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	575V		3.9	81	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	245	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		15.2	243	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		7.6	100	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	575V		6.1	83	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	208V	7.5	24.2	252	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		22.0	250	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		11.0	103	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	575V		9.0	86	100	100	(1) 2/0 - #14	(1) 1/0 - #14
AGZ050D PUMP	208V	1.5	6.6	255	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		6.0	254	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		3.0	113	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		2.4	99	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	208V	2.0	7.5	256	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		6.8	255	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		3.4	113	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		2.7	100	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	208V	3.0	10.6	259	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		9.6	258	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		4.8	115	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		3.9	101	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	208V	5.0	16.7	265	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		15.2	263	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		7.6	117	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		6.1	103	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	208V	7.5	24.2	272	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		22.0	270	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		11.0	121	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		9.0	106	125	125	(1) 2/0 - #14	(1) 3/0 - #14

Note: Power block and disconnect switch sizes are minimums. Larger sizes may be used, however the lug range must be the same.

Table 15: Electrical Data - Single Point (Continued)

Model	Voltage	Pump		Ratings			Lug Range	
		HP	FLA	MCA	RFS	MFS	Power Block (1)	Disconnect Switch (1)
AGZ055D PUMP	208V	1.5	6.6	263	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		6.0	261	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		3.0	121	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		2.4	108	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	2.0	7.5	264	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		6.8	262	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		3.4	122	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		2.7	108	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	3.0	10.6	267	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		9.6	264	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		4.8	123	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		3.9	109	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	5.0	16.7	273	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		15.2	270	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		7.6	126	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	575V		6.1	112	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	7.5	24.2	281	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		22.0	277	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		11.0	129	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	575V		9.0	115	125	125	(1) 2/0 - #14	(1) 3/0 - #14
AGZ060D PUMP	208V	2.0	7.5	272	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		6.8	268	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		3.4	129	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	575V		2.7	116	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	3.0	10.6	275	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		9.6	270	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		4.8	131	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	575V		3.9	117	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	5.0	16.7	281	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		15.2	276	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		7.6	134	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	575V		6.1	119	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	7.5	24.2	288	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		22.0	283	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		11.0	137	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	575V		9.0	122	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	10.0	30.8	295	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		28.0	289	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		14.0	140	150	150	(1) 2/0 - #14	(2) 300 - 1/0
	575V		11.0	124	125	125	(1) 2/0 - #14	(1) 3/0 - #14
AGZ065D PUMP	208V	2.0	7.5	280	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		6.8	276	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		3.4	133	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	575V		2.7	116	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	3.0	10.6	283	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		9.6	278	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		4.8	134	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	575V		3.9	117	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	5.0	16.7	289	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		15.2	284	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		7.6	137	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	575V		6.1	119	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	7.5	24.2	296	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		22.0	291	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		11.0	140	150	150	(1) 2/0 - #14	(2) 300 - 1/0
	575V		9.0	122	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	10.0	30.8	303	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		28.0	297	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		14.0	143	150	150	(1) 2/0 - #14	(2) 300 - 1/0
	575V		11.0	124	125	125	(1) 2/0 - #14	(1) 3/0 - #14

Note: Power block and disconnect switch sizes are minimums. Larger sizes may be used, however the lug range must be the same.

Table 16: Electrical Data - Single Point (Continued)

Model	Voltage	Pump		Ratings			Lug Range	
		HP	FLA	MCA	RFS	MFS	Power Block (1)	Disconnect Switch (1)
AGZ070D PUMP	208V	2.0	7.5	315	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		6.8	313	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		3.4	141	150	150	(1) 2/0 - #14	(2) 300 - 1/0
	575V		2.7	119	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	3.0	10.6	318	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		9.6	316	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		4.8	143	150	150	(1) 2/0 - #14	(2) 300 - 1/0
	575V		3.9	120	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	5.0	16.7	324	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		15.2	324	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		7.6	146	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	575V		6.1	123	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	208V	7.5	24.2	332	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		22.0	328	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		11.0	149	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	575V		9.0	126	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	10.0	30.8	339	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	230V		28.0	334	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		14.0	152	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	575V		11.0	128	150	150	(1) 2/0 - #14	(1) 3/0 - #14
AGZ075D PUMP	208V	3.0	10.6	366	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	230V		9.6	365	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	460V		4.8	158	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	575V		3.9	129	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	5.0	16.7	372	400	400	(2) 500 - #6	(2) 500 - 3/0
	230V		15.2	370	400	400	(2) 500 - #6	(2) 500 - 3/0
	460V		7.6	161	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	575V		6.1	132	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	7.5	24.2	379	450	450	(2) 500 - #6	(2) 500 - 3/0
	230V		22.0	377	400	400	(2) 500 - #6	(2) 500 - 3/0
	460V		11.0	164	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	575V		9.0	135	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	10.0	30.8	386	450	450	(2) 500 - #6	(2) 500 - 3/0
	230V		28.0	383	450	450	(2) 500 - #6	(2) 500 - 3/0
	460V		14.0	167	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	575V		11.0	137	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	15.0	46.2	401	450	450	(2) 500 - #6	(2) 500 - 3/0
	230V		42.0	397	450	450	(2) 500 - #6	(2) 500 - 3/0
	460V		21.0	174	200	200	(1) 600 - #2	(2) 300 - 1/0
	575V		17.0	143	150	150	(1) 2/0 - #14	(2) 300 - 1/0
AGZ080D PUMP	208V	3.0	10.6	403	450	450	(2) 500 - #6	(2) 500 - 3/0
	230V		9.6	402	450	450	(2) 500 - #6	(2) 500 - 3/0
	460V		4.8	176	200	200	(1) 600 - #2	(2) 300 - 1/0
	575V		3.9	151	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	208V	5.0	16.7	409	450	450	(2) 500 - #6	(2) 500 - 3/0
	230V		15.2	408	450	450	(2) 500 - #6	(2) 500 - 3/0
	460V		7.6	179	200	200	(1) 600 - #2	(2) 300 - 1/0
	575V		6.1	153	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	208V	7.5	24.2	417	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		22.0	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		11.0	182	200	200	(1) 600 - #2	(2) 300 - 1/0
	575V		9.0	156	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	208V	10.0	30.8	423	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		28.0	421	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		14.0	185	200	200	(1) 600 - #2	(2) 300 - 1/0
	575V		11.0	158	175	175	(1) 2/0 - #14	(2) 300 - 1/0
	208V	15.0	46.2	439	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		42.0	435	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		21.0	192	225	225	(1) 600 - #2	(2) 300 - 1/0
	575V		17.0	164	175	175	(1) 2/0 - #14	(2) 300 - 1/0

Note: Power block and disconnect switch sizes are minimums. Larger sizes may be used, however the lug range must be the same.

Table 17: Electrical Data - Single Point (Continued)

Model	Voltage	Pump		Ratings			Lug Range	
		HP	FLA	MCA	RFS	MFS	Power Block (1)	Disconnect Switch (1)
AGZ090D PUMP	208V	3.0	10.6	437	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		9.6	436	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		4.8	193	225	225	(1) 600 - #2	(2) 300 - 1/0
	575V		3.9	170	200	200	(1) 600 - #2	(2) 300 - 1/0
	208V	5.0	16.7	443	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		15.2	441	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		7.6	195	225	225	(1) 600 - #2	(2) 300 - 1/0
	575V		6.1	172	200	200	(1) 600 - #2	(2) 300 - 1/0
	208V	7.5	24.2	450	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		22.0	448	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		11.0	199	225	225	(1) 600 - #2	(2) 300 - 1/0
	575V		9.0	175	200	200	(1) 600 - #2	(2) 300 - 1/0
	208V	10.0	30.8	457	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		28.0	454	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		14.0	202	225	225	(1) 600 - #2	(2) 300 - 1/0
	575V		11.0	177	200	200	(1) 600 - #2	(2) 300 - 1/0
	208V	15.0	46.2	472	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		42.0	468	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		21.0	209	250	250	(1) 600 - #2	(2) 300 - 1/0
	575V		17.0	183	200	200	(1) 600 - #2	(2) 300 - 1/0
AGZ100D PUMP	208V	3.0	10.6	496	600	600	(2) 500 - #6	(2) 500 - 3/0
	230V		9.6	495	600	600	(2) 500 - #6	(2) 500 - 3/0
	460V		4.8	227	250	250	(1) 600 - #2	(2) 300 - 1/0
	575V		3.9	203	250	250	(1) 600 - #2	(2) 300 - 1/0
	208V	5.0	16.7	502	600	600	(2) 500 - #6	(2) 500 - 3/0
	230V		15.2	501	600	600	(2) 500 - #6	(2) 500 - 3/0
	460V		7.6	230	250	250	(1) 600 - #2	(2) 300 - 1/0
	575V		6.1	205	250	250	(1) 600 - #2	(2) 300 - 1/0
	208V	7.5	24.2	510	600	600	(2) 500 - #6	(2) 500 - 3/0
	230V		22.0	507	600	600	(2) 500 - #6	(2) 500 - 3/0
	460V		11.0	234	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		9.0	208	250	250	(1) 600 - #2	(2) 300 - 1/0
	208V	10.0	30.8	516	600	600	(2) 500 - #6	(2) 500 - 3/0
	230V		28.0	513	600	600	(2) 500 - #6	(2) 500 - 3/0
	460V		14.0	237	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		11.0	210	250	250	(1) 600 - #2	(2) 300 - 1/0
	208V	15.0	46.2	532	600	600	(2) 500 - #6	(2) 500 - 3/0
	230V		42.0	527	600	600	(2) 500 - #6	(2) 500 - 3/0
	460V		21.0	244	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		17.0	216	250	250	(1) 600 - #2	(2) 300 - 1/0
AGZ110D PUMP	208V	3.0	10.6	539	600	600	(2) 500 - #6	(2) 500 - 3/0
	230V		9.6	538	600	600	(2) 500 - #6	(2) 500 - 3/0
	460V		4.8	227	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		3.9	186	200	200	(1) 600 - #2	(2) 300 - 1/0
	208V	5.0	16.7	545	600	600	(2) 500 - #6	(3) 500 - 3/0
	230V		15.2	544	600	600	(2) 500 - #6	(3) 500 - 3/0
	460V		7.6	229	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		6.1	188	200	200	(1) 600 - #2	(2) 300 - 1/0
	208V	7.5	24.2	553	600	600	(2) 500 - #6	(3) 500 - 3/0
	230V		22.0	550	600	600	(2) 500 - #6	(3) 500 - 3/0
	460V		11.0	233	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		9.0	191	200	200	(1) 600 - #2	(2) 300 - 1/0
	208V	10.0	30.8	559	600	600	(2) 500 - #6	(3) 500 - 3/0
	230V		28.0	556	600	600	(2) 500 - #6	(3) 500 - 3/0
	460V		14.0	236	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		11.0	193	200	200	(1) 600 - #2	(2) 300 - 1/0
	208V	15.0	46.2	575	600	600	(2) 500 - #6	(3) 500 - 3/0
	230V		42.0	570	600	600	(2) 500 - #6	(3) 500 - 3/0
	460V		21.0	243	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		17.0	199	200	200	(1) 600 - #2	(2) 300 - 1/0

Note: Power block and disconnect switch sizes are minimums. Larger sizes may be used, however the lug range must be the same.

Table 18: Electrical Data - Single Point (Continued)

Model	Voltage	Pump		Ratings			Lug Range	
		HP	FLA	MCA	RFS	MFS	Power Block (1)	Disconnect Switch (1)
AGZ125D PUMP	208V	3.0	10.6	587	600	600	(2) 500 - #6	(3) 500 - 3/0
	230V		9.6	586	600	600	(2) 500 - #6	(3) 500 - 3/0
	460V		4.8	271	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		3.9	217	250	250	(1) 600 - #2	(2) 300 - 1/0
	208V	5.0	16.7	593	600	600	(2) 500 - #6	(3) 500 - 3/0
	230V		15.2	591	600	600	(2) 500 - #6	(3) 500 - 3/0
	460V		7.6	274	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		6.1	219	250	250	(1) 600 - #2	(2) 300 - 1/0
	208V	7.5	24.2	600	600	600	(2) 500 - #6	(3) 500 - 3/0
	230V		22.0	598	600	600	(2) 500 - #6	(3) 500 - 3/0
	460V		11.0	277	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		9.0	222	250	250	(1) 600 - #2	(2) 300 - 1/0
	208V	10.0	30.8	607	600	600	(2) 500 - #6	(3) 500 - 3/0
	230V		28.0	604	600	600	(2) 500 - #6	(3) 500 - 3/0
	460V		14.0	280	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		11.0	224	250	250	(1) 600 - #2	(2) 300 - 1/0
	208V	15.0	46.2	622	700	700	(2) 500 - #6	(3) 500 - 3/0
	230V		42.0	618	700	700	(2) 500 - #6	(3) 500 - 3/0
	460V		21.0	287	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		17.0	230	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
AGZ130D PUMP	208V	3.0	10.6	630	700	700	(2) 500 - #6	(3) 500 - 3/0
	230V		9.6	629	700	700	(2) 500 - #6	(3) 500 - 3/0
	460V		4.8	312	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		3.9	245	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	208V	5.0	16.7	636	700	700	(2) 500 - #6	(3) 500 - 3/0
	230V		15.2	635	700	700	(2) 500 - #6	(3) 500 - 3/0
	460V		7.6	315	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		6.1	247	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	208V	7.5	24.2	644	700	700	(2) 500 - #6	(3) 500 - 3/0
	230V		22.0	642	700	700	(2) 500 - #6	(3) 500 - 3/0
	460V		11.0	318	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		9.0	250	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	208V	10.0	30.8	651	700	700	(2) 500 - #6	(3) 500 - 3/0
	230V		28.0	648	700	700	(2) 500 - #6	(3) 500 - 3/0
	460V		14.0	321	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		11.0	252	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	208V	15.0	46.2	666	700	700	(2) 500 - #6	(3) 500 - 3/0
	230V		42.0	662	700	700	(2) 500 - #6	(3) 500 - 3/0
	460V		21.0	328	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		17.0	258	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
AGZ140D PUMP	208V	5.0	16.7	652	700	700	(2) 500 - #6	(3) 500 - 3/0
	230V		15.2	651	700	700	(2) 500 - #6	(3) 500 - 3/0
	460V		7.6	322	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		6.1	253	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	208V	7.5	24.2	660	700	700	(2) 500 - #6	(3) 500 - 3/0
	230V		22.0	657	700	700	(2) 500 - #6	(3) 500 - 3/0
	460V		11.0	326	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		9.0	256	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	208V	10.0	30.8	666	700	700	(2) 500 - #6	(3) 500 - 3/0
	230V		28.0	663	700	700	(2) 500 - #6	(3) 500 - 3/0
	460V		14.0	329	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	575V		11.0	258	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	208V	15.0	46.2	682	700	700	(4) 500 - #6	(4) 500 - 3/0
	230V		42.0	677	700	700	(4) 500 - #6	(4) 500 - 3/0
	460V		21.0	336	350	350	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	575V		17.0	264	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	208V	20.0	59.4	695	700	700	(4) 500 - #6	(4) 500 - 3/0
	230V		54.0	689	700	700	(4) 500 - #6	(4) 500 - 3/0
	460V		27.0	342	350	350	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	575V		22.0	269	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1

Note: Power block and disconnect switch sizes are minimums. Larger sizes may be used, however the lug range must be the same.

Table 19: Electrical Data - Single Point (Continued)

Model	Voltage	Pump		Ratings			Lug Range	
		HP	FLA	MCA	RFS	MFS	Power Block (1)	Disconnect Switch (1)
AGZ160D PUMP	208V	5.0	16.7	738	800	800	(4) 500 - #6	(4) 500 - 3/0
	230V		15.2	736	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		7.6	355	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	575V		6.1	301	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	208V	7.5	24.2	745	800	800	(4) 500 - #6	(4) 500 - 3/0
	230V		22.0	743	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		11.0	358	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	575V		9.0	304	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	208V	10.0	30.8	752	800	800	(4) 500 - #6	(4) 500 - 3/0
	230V		28.0	749	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		14.0	361	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	575V		11.0	306	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	208V	15.0	46.2	767	800	800	(4) 500 - #6	(4) 500 - 3/0
	230V		42.0	763	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		21.0	368	400	400	(2) 500 - #6	(2) 500 - 3/0
	575V		17.0	312	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	208V	20.0	59.4	781	800	800	(4) 500 - #6	(4) 500 - 3/0
	230V		54.0	775	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		27.0	374	400	400	(2) 500 - #6	(2) 500 - 3/0
	575V		22.0	317	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
AGZ180D PUMP	208V	5.0	16.7	892	1000	1000	(4) 500 - #6	(4) 500 - 3/0
	230V		15.2	816	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		7.6	402	450	450	(2) 500 - #4	(2) 500 - 3/0
	575V		6.1	345	350	350	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	208V	7.5	24.2	900	1000	1000	(4) 500 - #6	(4) 500 - 3/0
	230V		22.0	822	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		11.0	405	450	450	(2) 500 - #6	(2) 500 - 3/0
	575V		9.0	348	350	350	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	208V	10.0	30.8	906	1000	1000	(4) 500 - #6	(4) 500 - 3/0
	230V		28.0	828	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		14.0	408	450	450	(2) 500 - #6	(2) 500 - 3/0
	575V		11.0	350	350	350	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	208V	15.0	46.2	922	1000	1000	(4) 500 - #6	(4) 500 - 3/0
	230V		42.0	842	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		21.0	415	450	450	(2) 500 - #6	(2) 500 - 3/0
	575V		17.0	356	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	208V	20.0	59.4	935	1000	1000	(4) 500 - #6	(4) 500 - 3/0
	230V		54.0	854	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		27.0	421	450	450	(2) 500 - #6	(2) 500 - 3/0
	575V		22.0	361	400	400	(2) 500 - #6	(2) 500 - 3/0
AGZ190D PUMP	208V	5.0	16.7	908	1000	1000	(4) 500 - #6	(4) 500 - 3/0
	230V		15.2	831	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		7.6	409	450	450	(2) 500 - #6	(2) 500 - 3/0
	575V		6.1	351	350	350	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	208V	7.5	24.2	915	1000	1000	(4) 500 - #6	(4) 500 - 3/0
	230V		22.0	838	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		11.0	412	450	450	(2) 500 - #6	(2) 500 - 3/0
	575V		9.0	354	350	350	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	208V	10.0	30.8	922	1000	1000	(4) 500 - #6	(4) 500 - 3/0
	230V		28.0	844	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		14.0	415	450	450	(2) 500 - #6	(2) 500 - 3/0
	575V		11.0	356	350	350	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1
	208V	15.0	46.2	937	1000	1000	(4) 500 - #6	(4) 500 - 3/0
	230V		42.0	858	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		21.0	422	450	450	(2) 500 - #6	(2) 500 - 3/0
	575V		17.0	362	350	350	(2) 500 - #6	(2) 500 - 3/0
	208V	20.0	59.4	950	1000	1000	(4) 500 - #6	(4) 500 - 3/0
	230V		54.0	870	800	800	(4) 500 - #6	(4) 500 - 3/0
	460V		27.0	428	450	450	(2) 500 - #6	(2) 500 - 3/0
	575V		22.0	367	350	350	(2) 500 - #6	(2) 500 - 3/0

Note: Power block and disconnect switch sizes are minimums. Larger sizes may be used, however the lug range must be the same.

Table 20: Electrical Data - Multi-Point

Model	Voltage	Pump		Multiple Point Field Data - Circuit #1					Multiple Point Field Data - Circuit #2				
				Ratings			Lug Range		Ratings			Lug Range	
		HP	FLA	MCA	RFS	MFS	Power Block (1)	Disconnect Switch [1]	MCA	RFS	MFS	Power Block (1)	Disconnect Switch [1]
AGZ025D PUMP	208V	1.0	4.6	83	110	110	(1) 2/0 - #14	(1) 1/0 - #14	78	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	230V		4.2	83	110	110	(1) 2/0 - #14	(1) 1/0 - #14	78	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	460V		2.1	41	50	50	(1) 2/0 - #14	(1) 1/0 - #14	39	50	50	(1) 2/0 - #14	(1) 1/0 - #14
	575V		1.7	36	45	45	(1) 2/0 - #14	(1) 1/0 - #14	34	45	45	(1) 2/0 - #14	(1) 1/0 - #14
	208V	1.5	6.6	85	110	110	(1) 2/0 - #14	(1) 1/0 - #14	78	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	230V		6.0	84	110	110	(1) 2/0 - #14	(1) 1/0 - #14	78	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	460V		3.0	42	50	50	(1) 2/0 - #14	(1) 1/0 - #14	39	50	50	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.4	36	45	45	(1) 2/0 - #14	(1) 1/0 - #14	34	45	45	(1) 2/0 - #14	(1) 1/0 - #14
	208V	2.0	7.5	86	110	110	(1) 2/0 - #14	(1) 1/0 - #14	78	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	230V		6.8	85	110	110	(1) 2/0 - #14	(1) 1/0 - #14	78	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	460V		3.4	43	50	50	(1) 2/0 - #14	(1) 1/0 - #14	39	50	50	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.7	37	45	45	(1) 2/0 - #14	(1) 1/0 - #14	34	45	45	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	89	110	110	(1) 2/0 - #14	(1) 1/0 - #14	78	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	230V		9.6	88	110	110	(1) 2/0 - #14	(1) 1/0 - #14	78	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	460V		4.8	44	50	50	(1) 2/0 - #14	(1) 1/0 - #14	39	50	50	(1) 2/0 - #14	(1) 1/0 - #14
	575V		3.9	38	45	45	(1) 2/0 - #14	(1) 1/0 - #14	34	45	45	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	95	110	110	(1) 2/0 - #14	(1) 3/0 - #14	78	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	230V		15.2	94	110	110	(1) 2/0 - #14	(1) 1/0 - #14	78	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	460V		7.6	47	60	60	(1) 2/0 - #14	(1) 1/0 - #14	39	50	50	(1) 2/0 - #14	(1) 1/0 - #14
	575V		6.1	40	50	50	(1) 2/0 - #14	(1) 1/0 - #14	34	45	45	(1) 2/0 - #14	(1) 1/0 - #14
AGZ030D PUMP	208V	1.0	4.6	88	110	110	(1) 2/0 - #14	(1) 1/0 - #14	83	110	110.3	(1) 2/0 - #14	(1) 1/0 - #14
	230V		4.2	84	110	110	(1) 2/0 - #14	(1) 1/0 - #14	80	100	100.3	(1) 2/0 - #14	(1) 1/0 - #14
	460V		2.1	46	60	60	(1) 2/0 - #14	(1) 1/0 - #14	44	60	60.3	(1) 2/0 - #14	(1) 1/0 - #14
	575V		1.7	37	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45.3	(1) 2/0 - #14	(1) 1/0 - #14
	208V	1.5	6.6	90	110	110	(1) 2/0 - #14	(1) 1/0 - #14	83	110	110.3	(1) 2/0 - #14	(1) 1/0 - #14
	230V		6.0	86	110	110	(1) 2/0 - #14	(1) 1/0 - #14	80	100	100.3	(1) 2/0 - #14	(1) 1/0 - #14
	460V		3.0	47	60	60	(1) 2/0 - #14	(1) 1/0 - #14	44	60	60.3	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.4	38	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45.3	(1) 2/0 - #14	(1) 1/0 - #14
	208V	2.0	7.5	91	110	110	(1) 2/0 - #14	(1) 1/0 - #14	83	110	110.3	(1) 2/0 - #14	(1) 1/0 - #14
	230V		6.8	87	110	110	(1) 2/0 - #14	(1) 1/0 - #14	80	100	100.3	(1) 2/0 - #14	(1) 1/0 - #14
	460V		3.4	47	60	60	(1) 2/0 - #14	(1) 1/0 - #14	44	60	60.3	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.7	38	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45.3	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	94	125	125	(1) 2/0 - #14	(1) 1/0 - #14	83	110	110.3	(1) 2/0 - #14	(1) 1/0 - #14
	230V		9.6	89	110	110	(1) 2/0 - #14	(1) 1/0 - #14	80	100	100.3	(1) 2/0 - #14	(1) 1/0 - #14
	460V		4.8	48	60	60	(1) 2/0 - #14	(1) 1/0 - #14	44	60	60.3	(1) 2/0 - #14	(1) 1/0 - #14
	575V		3.9	40	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45.3	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	100	125	125	(1) 2/0 - #14	(1) 3/0 - #14	83	110	110.3	(1) 2/0 - #14	(1) 1/0 - #14
	230V		15.2	95	110	110	(1) 2/0 - #14	(1) 3/0 - #14	80	100	100.3	(1) 2/0 - #14	(1) 1/0 - #14
	460V		7.6	51	60	60	(1) 2/0 - #14	(1) 1/0 - #14	44	60	60.3	(1) 2/0 - #14	(1) 1/0 - #14
	575V		6.1	42	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45.3	(1) 2/0 - #14	(1) 1/0 - #14
AGZ035D PUMP	208V	1.5	6.6	90	110	110	(1) 2/0 - #14	(1) 1/0 - #14	94	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	230V		6.0	86	110	110	(1) 2/0 - #14	(1) 1/0 - #14	93	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	460V		3.0	47	60	60	(1) 2/0 - #14	(1) 1/0 - #14	46	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.4	38	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45	(1) 2/0 - #14	(1) 1/0 - #14
	208V	2.0	7.5	91	110	110	(1) 2/0 - #14	(1) 1/0 - #14	94	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	230V		6.8	87	110	110	(1) 2/0 - #14	(1) 1/0 - #14	93	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	460V		3.4	47	60	60	(1) 2/0 - #14	(1) 1/0 - #14	46	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.7	38	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	94	125	125	(1) 2/0 - #14	(1) 1/0 - #14	94	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	230V		9.6	89	110	110	(1) 2/0 - #14	(1) 1/0 - #14	93	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	460V		4.8	48	60	60	(1) 2/0 - #14	(1) 1/0 - #14	46	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		3.9	40	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	100	125	125	(1) 2/0 - #14	(1) 3/0 - #14	94	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	230V		15.2	95	110	110	(1) 2/0 - #14	(1) 3/0 - #14	93	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	460V		7.6	51	60	60	(1) 2/0 - #14	(1) 1/0 - #14	46	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		6.1	42	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45	(1) 2/0 - #14	(1) 1/0 - #14
	208V	7.5	24.2	107	125	125	(1) 2/0 - #14	(1) 3/0 - #14	94	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	230V		22.0	102	125	125	(1) 2/0 - #14	(1) 3/0 - #14	93	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	460V		11.0	55	70	70	(1) 2/0 - #14	(1) 1/0 - #14	46	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		9.0	45	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45	(1) 2/0 - #14	(1) 1/0 - #14

Note: Power block and disconnect switch sizes are minimums. Larger sizes may be used, however the lug range must be the same.

Table 21: Electrical Data - Multi-Point (Continued)

Model	Voltage	Pump		Multiple Point Field Data - Circuit #1					Multiple Point Field Data - Circuit #2				
		Ratings					Lug Range		Ratings			Lug Range	
		HP	FLA	MCA	RFS	MFS	Power Block (1)	Disconnect Switch [1]	MCA	RFS	MFS	Power Block (1)	Disconnect Switch [1]
AGZ040D PUMP	208V	1.5	6.6	100	125	125	(1) 2/0 - #14	(1) 3/0 - #14	94	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	230V		6.0	99	125	125	(1) 2/0 - #14	(1) 3/0 - #14	93	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	460V		3.0	49	60	60	(1) 2/0 - #14	(1) 1/0 - #14	46	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.4	38	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45	(1) 2/0 - #14	(1) 1/0 - #14
	208V	2.0	7.5	101	125	125	(1) 2/0 - #14	(1) 3/0 - #14	94	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	230V		6.8	100	125	125	(1) 2/0 - #14	(1) 3/0 - #14	93	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	460V		3.4	50	60	60	(1) 2/0 - #14	(1) 1/0 - #14	46	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.7	38	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	104	125	125	(1) 2/0 - #14	(1) 3/0 - #14	94	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	230V		9.6	103	125	125	(1) 2/0 - #14	(1) 3/0 - #14	93	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	460V		4.8	51	60	60	(1) 2/0 - #14	(1) 1/0 - #14	46	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		3.9	40	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	110	125	125	(1) 2/0 - #14	(1) 3/0 - #14	94	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	230V		15.2	108	125	125	(1) 2/0 - #14	(1) 3/0 - #14	93	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	460V		7.6	54	70	70	(1) 2/0 - #14	(1) 1/0 - #14	46	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		6.1	42	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45	(1) 2/0 - #14	(1) 1/0 - #14
	208V	7.5	24.2	118	150	150	(1) 2/0 - #14	(1) 3/0 - #14	94	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	230V		22.0	115	150	150	(1) 2/0 - #14	(1) 3/0 - #14	93	125	125	(1) 2/0 - #14	(1) 1/0 - #14
	460V		11.0	57	70	70	(1) 2/0 - #14	(1) 1/0 - #14	46	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		9.0	45	50	50	(1) 2/0 - #14	(1) 1/0 - #14	36	45	45	(1) 2/0 - #14	(1) 1/0 - #14
AGZ045D PUMP	208V	1.5	6.6	127	150	150	(1) 2/0 - #14	(1) 3/0 - #14	120	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	230V		6.0	126	150	150	(1) 2/0 - #14	(1) 3/0 - #14	120	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	460V		3.0	52	70	70	(1) 2/0 - #14	(1) 1/0 - #14	49	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.4	43	50	50	(1) 2/0 - #14	(1) 1/0 - #14	40	50	50	(1) 2/0 - #14	(1) 1/0 - #14
	208V	2.0	7.5	128	175	175	(1) 2/0 - #14	(1) 3/0 - #14	120	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	230V		6.8	127	150	150	(1) 2/0 - #14	(1) 3/0 - #14	120	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	460V		3.4	52	70	70	(1) 2/0 - #14	(1) 1/0 - #14	49	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.7	43	50	50	(1) 2/0 - #14	(1) 1/0 - #14	40	50	50	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	131	175	175	(1) 2/0 - #14	(1) 3/0 - #14	120	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	230V		9.6	130	175	175	(1) 2/0 - #14	(1) 3/0 - #14	120	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	460V		4.8	53	70	70	(1) 2/0 - #14	(1) 1/0 - #14	49	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		3.9	44	50	50	(1) 2/0 - #14	(1) 1/0 - #14	40	50	50	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	137	175	175	(1) 2/0 - #14	(1) 3/0 - #14	120	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	230V		15.2	135	175	175	(1) 2/0 - #14	(1) 3/0 - #14	120	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	460V		7.6	56	70	70	(1) 2/0 - #14	(1) 1/0 - #14	49	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		6.1	47	60	60	(1) 2/0 - #14	(1) 1/0 - #14	40	50	50	(1) 2/0 - #14	(1) 1/0 - #14
	208V	7.5	24.2	144	175	175	(1) 2/0 - #14	(2) 300 - 1/0	120	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	230V		22.0	142	175	175	(1) 2/0 - #14	(1) 3/0 - #14	120	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	460V		11.0	60	70	70	(1) 2/0 - #14	(1) 1/0 - #14	49	60	60	(1) 2/0 - #14	(1) 1/0 - #14
	575V		9.0	49	60	60	(1) 2/0 - #14	(1) 1/0 - #14	40	50	50	(1) 2/0 - #14	(1) 1/0 - #14
AGZ050D PUMP	208V	1.5	6.6	137	175	175	(1) 2/0 - #14	(1) 3/0 - #14	131	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		6.0	137	175	175	(1) 2/0 - #14	(1) 3/0 - #14	131	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		3.0	61	80	80	(1) 2/0 - #14	(1) 1/0 - #14	58	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.4	54	70	70	(1) 2/0 - #14	(1) 1/0 - #14	51	70	70	(1) 2/0 - #14	(1) 1/0 - #14
	208V	2.0	7.5	138	175	175	(1) 2/0 - #14	(1) 3/0 - #14	131	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		6.8	138	175	175	(1) 2/0 - #14	(1) 3/0 - #14	131	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		3.4	61	80	80	(1) 2/0 - #14	(1) 1/0 - #14	58	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.7	54	70	70	(1) 2/0 - #14	(1) 1/0 - #14	51	70	70	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	141	175	175	(1) 2/0 - #14	(1) 3/0 - #14	131	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		9.6	140	175	175	(1) 2/0 - #14	(1) 3/0 - #14	131	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		4.8	63	80	80	(1) 2/0 - #14	(1) 1/0 - #14	58	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	575V		3.9	55	70	70	(1) 2/0 - #14	(1) 1/0 - #14	51	70	70	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	148	200	200	(1) 2/0 - #14	(2) 300 - 1/0	131	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		15.2	146	175	175	(1) 2/0 - #14	(2) 300 - 1/0	131	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		7.6	66	80	80	(1) 2/0 - #14	(1) 1/0 - #14	58	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	575V		6.1	57	70	70	(1) 2/0 - #14	(1) 1/0 - #14	51	70	70	(1) 2/0 - #14	(1) 1/0 - #14
	208V	7.5	24.2	155	200	200	(1) 2/0 - #14	(2) 300 - 1/0	131	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		22.0	153	200	200	(1) 2/0 - #14	(2) 300 - 1/0	131	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		11.0	69	90	90	(1) 2/0 - #14	(1) 1/0 - #14	58	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	575V		9.0	60	70	70	(1) 2/0 - #14	(1) 1/0 - #14	51	70	70	(1) 2/0 - #14	(1) 1/0 - #14

Note: Power block and disconnect switch sizes are minimums. Larger sizes may be used, however the lug range must be the same.

Table 22: Electrical Data - Multi-Point (Continued)

Model	Voltage	Pump		Multiple Point Field Data - Circuit #1					Multiple Point Field Data - Circuit #2				
				Ratings			Lug Range		Ratings			Lug Range	
		HP	FLA	MCA	RFS	MFS	Power Block (1)	Disconnect Switch [1]	MCA	RFS	MFS	Power Block (1)	Disconnect Switch [1]
AGZ055D PUMP	208V	1.5	6.6	137	175	175	(1) 2/0 - #14	(1) 3/0 - #14	139	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		6.0	137	175	175	(1) 2/0 - #14	(1) 3/0 - #14	138	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		3.0	61	80	80	(1) 2/0 - #14	(1) 1/0 - #14	67	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.4	54	70	70	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	2.0	7.5	138	175	175	(1) 2/0 - #14	(1) 3/0 - #14	139	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		6.8	138	175	175	(1) 2/0 - #14	(1) 3/0 - #14	138	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		3.4	61	80	80	(1) 2/0 - #14	(1) 1/0 - #14	67	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.7	54	70	70	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	141	175	175	(1) 2/0 - #14	(1) 3/0 - #14	139	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		9.6	140	175	175	(1) 2/0 - #14	(1) 3/0 - #14	138	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		4.8	63	80	80	(1) 2/0 - #14	(1) 1/0 - #14	67	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		3.9	55	70	70	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	148	200	200	(1) 2/0 - #14	(2) 300 - 1/0	139	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		15.2	146	175	175	(1) 2/0 - #14	(2) 300 - 1/0	138	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		7.6	66	80	80	(1) 2/0 - #14	(1) 1/0 - #14	67	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		6.1	57	70	70	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	7.5	24.2	155	200	200	(1) 2/0 - #14	(2) 300 - 1/0	139	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		22.0	153	200	200	(1) 2/0 - #14	(2) 300 - 1/0	138	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		11.0	69	90	90	(1) 2/0 - #14	(1) 1/0 - #14	67	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		9.0	60	70	70	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14
AGZ060D PUMP	208V	2.0	7.5	147	200	200	(1) 2/0 - #14	(2) 300 - 1/0	139	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		6.8	144	175	175	(1) 2/0 - #14	(1) 3/0 - #14	138	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		3.4	70	90	90	(1) 2/0 - #14	(1) 1/0 - #14	67	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.7	62	80	80	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	150	200	200	(1) 2/0 - #14	(2) 300 - 1/0	139	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		9.6	147	200	200	(1) 2/0 - #14	(2) 300 - 1/0	138	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		4.8	71	90	90	(1) 2/0 - #14	(1) 1/0 - #14	67	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		3.9	64	80	80	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	156	200	200	(1) 2/0 - #14	(2) 300 - 1/0	139	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		15.2	153	200	200	(1) 2/0 - #14	(2) 300 - 1/0	138	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		7.6	74	100	100	(1) 2/0 - #14	(1) 1/0 - #14	67	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		6.1	66	80	80	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	7.5	24.2	164	200	200	(1) 2/0 - #14	(2) 300 - 1/0	139	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		22.0	160	200	200	(1) 2/0 - #14	(2) 300 - 1/0	138	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		11.0	78	100	100	(1) 2/0 - #14	(1) 1/0 - #14	67	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		9.0	69	90	90	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	10.0	30.8	170	225	225	(1) 600 - #2	(2) 300 - 1/0	139	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		28.0	166	200	200	(1) 2/0 - #14	(2) 300 - 1/0	138	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		14.0	81	100	100	(1) 2/0 - #14	(1) 1/0 - #14	67	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		11.0	71	90	90	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14
AGZ065D PUMP	208V	2.0	7.5	151	200	200	(1) 2/0 - #14	(2) 300 - 1/0	143	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		6.8	148	200	200	(1) 2/0 - #14	(2) 300 - 1/0	142	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		3.4	72	90	90	(1) 2/0 - #14	(1) 1/0 - #14	68	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.7	62	80	80	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	154	200	200	(1) 2/0 - #14	(2) 300 - 1/0	143	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		9.6	151	200	200	(1) 2/0 - #14	(2) 300 - 1/0	142	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		4.8	73	90	90	(1) 2/0 - #14	(1) 1/0 - #14	68	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		3.9	64	80	80	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	160	200	200	(1) 2/0 - #14	(2) 300 - 1/0	143	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		15.2	157	200	200	(1) 2/0 - #14	(2) 300 - 1/0	142	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		7.6	76	100	100	(1) 2/0 - #14	(1) 1/0 - #14	68	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		6.1	66	80	80	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	7.5	24.2	168	200	200	(1) 2/0 - #14	(2) 300 - 1/0	143	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		22.0	164	200	200	(1) 2/0 - #14	(2) 300 - 1/0	142	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		11.0	79	100	100	(1) 2/0 - #14	(1) 1/0 - #14	68	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		9.0	69	90	90	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	10.0	30.8	174	225	225	(1) 600 - #2	(2) 300 - 1/0	143	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	230V		28.0	170	225	225	(1) 600 - #2	(2) 300 - 1/0	142	175	175	(1) 2/0 - #14	(1) 3/0 - #14
	460V		14.0	82	100	100	(1) 2/0 - #14	(1) 1/0 - #14	68	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	575V		11.0	71	90	90	(1) 2/0 - #14	(1) 1/0 - #14	60	80	80	(1) 2/0 - #14	(1) 1/0 - #14

Note: Power block and disconnect switch sizes are minimums. Larger sizes may be used, however the lug range must be the same.

Table 23: Electrical Data - Multi-Point (Continued)

Model	Voltage	Pump		Multiple Point Field Data - Circuit #1					Multiple Point Field Data - Circuit #2				
		Ratings					Lug Range		Ratings			Lug Range	
		HP	FLA	MCA	RFS	MFS	Power Block (1)	Disconnect Switch [1]	MCA	RFS	MFS	Power Block (1)	Disconnect Switch [1]
AGZ070D PUMP	208V	2.0	7.5	171	225	225	(1) 600 - #2	(2) 300 - 1/0	163	225	225	(1) 2/0 - #14	(2) 300 - 1/0
	230V		6.8	169	225	225	(1) 600 - #2	(2) 300 - 1/0	162	225	225	(1) 2/0 - #14	(2) 300 - 1/0
	460V		3.4	76	100	100	(1) 2/0 - #14	(1) 1/0 - #14	73	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		2.7	64	80	80	(1) 2/0 - #14	(1) 1/0 - #14	62	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	3.0	10.6	174	225	225	(1) 600 - #2	(2) 300 - 1/0	163	225	225	(1) 2/0 - #14	(2) 300 - 1/0
	230V		9.6	172	225	225	(1) 600 - #2	(2) 300 - 1/0	162	225	225	(1) 2/0 - #14	(2) 300 - 1/0
	460V		4.8	78	100	100	(1) 2/0 - #14	(1) 1/0 - #14	73	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		3.9	66	90	90	(1) 2/0 - #14	(1) 1/0 - #14	62	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	180	250	250	(1) 600 - #2	(2) 300 - 1/0	163	225	225	(1) 2/0 - #14	(2) 300 - 1/0
	230V		15.2	178	225	225	(1) 600 - #2	(2) 300 - 1/0	162	225	225	(1) 2/0 - #14	(2) 300 - 1/0
	460V		7.6	81	110	110	(1) 2/0 - #14	(1) 1/0 - #14	73	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		6.1	68	90	90	(1) 2/0 - #14	(1) 1/0 - #14	62	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	7.5	24.2	187	250	250	(1) 600 - #2	(2) 300 - 1/0	163	225	225	(1) 2/0 - #14	(2) 300 - 1/0
	230V		22.0	184	250	250	(1) 600 - #2	(2) 300 - 1/0	162	225	225	(1) 2/0 - #14	(2) 300 - 1/0
	460V		11.0	84	110	110	(1) 2/0 - #14	(1) 1/0 - #14	73	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		9.0	71	90	90	(1) 2/0 - #14	(1) 1/0 - #14	62	80	80	(1) 2/0 - #14	(1) 1/0 - #14
	208V	10.0	30.8	194	250	250	(1) 600 - #2	(2) 300 - 1/0	163	225	225	(1) 2/0 - #14	(2) 300 - 1/0
	230V		28.0	190	250	250	(1) 600 - #2	(2) 300 - 1/0	162	225	225	(1) 2/0 - #14	(2) 300 - 1/0
	460V		14.0	87	110	110	(1) 2/0 - #14	(1) 1/0 - #14	73	100	100	(1) 2/0 - #14	(1) 1/0 - #14
	575V		11.0	73	90	90	(1) 2/0 - #14	(1) 1/0 - #14	62	80	80	(1) 2/0 - #14	(1) 1/0 - #14
AGZ075D PUMP	208V	3.0	10.6	197	250	250	(1) 600 - #2	(2) 300 - 1/0	187	250	250	(1) 600 - #2	(2) 300 - 1/0
	230V		9.6	196	250	250	(1) 600 - #2	(2) 300 - 1/0	187	250	250	(1) 600 - #2	(2) 300 - 1/0
	460V		4.8	85	110	110	(1) 2/0 - #14	(1) 1/0 - #14	81	110	110	(1) 2/0 - #14	(1) 1/0 - #14
	575V		3.9	70	90	90	(1) 2/0 - #14	(1) 1/0 - #14	66	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	203	250	250	(1) 600 - #2	(2) 300 - 1/0	187	250	250	(1) 600 - #2	(2) 300 - 1/0
	230V		15.2	202	250	250	(1) 600 - #2	(2) 300 - 1/0	187	250	250	(1) 600 - #2	(2) 300 - 1/0
	460V		7.6	88	110	110	(1) 2/0 - #14	(1) 1/0 - #14	81	110	110	(1) 2/0 - #14	(1) 1/0 - #14
	575V		6.1	72	90	90	(1) 2/0 - #14	(1) 1/0 - #14	66	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	208V	7.5	24.2	211	250	250	(1) 600 - #2	(2) 300 - 1/0	187	250	250	(1) 600 - #2	(2) 300 - 1/0
	230V		22.0	209	250	250	(1) 600 - #2	(2) 300 - 1/0	187	250	250	(1) 600 - #2	(2) 300 - 1/0
	460V		11.0	92	110	110	(1) 2/0 - #14	(1) 1/0 - #14	81	110	110	(1) 2/0 - #14	(1) 1/0 - #14
	575V		9.0	75	100	100	(1) 2/0 - #14	(1) 1/0 - #14	66	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	208V	10.0	30.8	218	250	250	(1) 600 - #2	(2) 300 - 1/0	187	250	250	(1) 600 - #2	(2) 300 - 1/0
	230V		28.0	215	250	250	(1) 600 - #2	(2) 300 - 1/0	187	250	250	(1) 600 - #2	(2) 300 - 1/0
	460V		14.0	95	125	125	(1) 2/0 - #14	(1) 1/0 - #14	81	110	110	(1) 2/0 - #14	(1) 1/0 - #14
	575V		11.0	77	100	100	(1) 2/0 - #14	(1) 1/0 - #14	66	90	90	(1) 2/0 - #14	(1) 1/0 - #14
	208V	15.0	46.2	233	300	300	(1) 600 - #2	(2) 300 - 1/0	187	250	250	(1) 600 - #2	(2) 300 - 1/0
	230V		42.0	229	300	300	(1) 600 - #2	(2) 300 - 1/0	187	250	250	(1) 600 - #2	(2) 300 - 1/0
	460V		21.0	102	125	125	(1) 2/0 - #14	(1) 3/0 - #14	81	110	110	(1) 2/0 - #14	(1) 1/0 - #14
	575V		17.0	83	100	100	(1) 2/0 - #14	(1) 1/0 - #14	66	90	90	(1) 2/0 - #14	(1) 1/0 - #14
AGZ080D PUMP	208V	3.0	10.6	197	250	250	(1) 600 - #2	(2) 300 - 1/0	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	230V		9.6	196	250	250	(1) 600 - #2	(2) 300 - 1/0	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	460V		4.8	85	110	110	(1) 2/0 - #14	(1) 1/0 - #14	99	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		3.9	70	90	90	(1) 2/0 - #14	(1) 1/0 - #14	88	110	110	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	203	250	250	(1) 600 - #2	(2) 300 - 1/0	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	230V		15.2	202	250	250	(1) 600 - #2	(2) 300 - 1/0	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	460V		7.6	88	110	110	(1) 2/0 - #14	(1) 1/0 - #14	99	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		6.1	72	90	90	(1) 2/0 - #14	(1) 1/0 - #14	88	110	110	(1) 2/0 - #14	(1) 1/0 - #14
	208V	7.5	24.2	211	250	250	(1) 600 - #2	(2) 300 - 1/0	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	230V		22.0	209	250	250	(1) 600 - #2	(2) 300 - 1/0	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	460V		11.0	92	110	110	(1) 2/0 - #14	(1) 1/0 - #14	99	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		9.0	75	100	100	(1) 2/0 - #14	(1) 1/0 - #14	88	110	110	(1) 2/0 - #14	(1) 1/0 - #14
	208V	10.0	30.8	218	250	250	(1) 600 - #2	(2) 300 - 1/0	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	230V		28.0	215	250	250	(1) 600 - #2	(2) 300 - 1/0	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	460V		14.0	95	125	125	(1) 2/0 - #14	(1) 1/0 - #14	99	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		11.0	77	100	100	(1) 2/0 - #14	(1) 1/0 - #14	88	110	110	(1) 2/0 - #14	(1) 1/0 - #14
	208V	15.0	46.2	233	300	300	(1) 600 - #2	(2) 300 - 1/0	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	230V		42.0	229	300	300	(1) 600 - #2	(2) 300 - 1/0	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	460V		21.0	102	125	125	(1) 2/0 - #14	(1) 3/0 - #14	99	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		17.0	83	100	100	(1) 2/0 - #14	(1) 1/0 - #14	88	110	110	(1) 2/0 - #14	(1) 1/0 - #14

Note: Power block and disconnect switch sizes are minimums. Larger sizes may be used, however the lug range must be the same.

Table 24: Electrical Data - Multi-Point (Continued)

Model	Voltage	Pump		Multiple Point Field Data - Circuit #1					Multiple Point Field Data - Circuit #2				
				Ratings			Lug Range		Ratings			Lug Range	
		HP	FLA	MCA	RFS	MFS	Power Block (1)	Disconnect Switch [1]	MCA	RFS	MFS	Power Block (1)	Disconnect Switch [1]
AGZ090D PUMP	208V	3.0	10.6	235	300	300	(1) 600 - #2	(2) 300 - 1/0	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	230V		9.6	234	300	300	(1) 600 - #2	(2) 300 - 1/0	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	460V		4.8	104	125	125	(1) 2/0 - #14	(1) 3/0 - #14	99	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		3.9	91	125	125	(1) 2/0 - #14	(1) 1/0 - #14	88	110	110	(1) 2/0 - #14	(1) 1/0 - #14
	208V	5.0	16.7	241	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	230V		15.2	240	300	300	(1) 600 - #2	(2) 300 - 1/0	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	460V		7.6	107	125	125	(1) 2/0 - #14	(1) 3/0 - #14	99	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		6.1	94	125	125	(1) 2/0 - #14	(1) 1/0 - #14	88	110	110	(1) 2/0 - #14	(1) 1/0 - #14
	208V	7.5	24.2	249	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	230V		22.0	246	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	460V		11.0	110	125	125	(1) 2/0 - #14	(1) 3/0 - #14	99	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		9.0	97	125	125	(1) 2/0 - #14	(1) 3/0 - #14	88	110	110	(1) 2/0 - #14	(1) 1/0 - #14
	208V	10.0	30.8	255	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	230V		28.0	252	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	460V		14.0	113	150	150	(1) 2/0 - #14	(1) 3/0 - #14	99	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		11.0	99	125	125	(1) 2/0 - #14	(1) 3/0 - #14	88	110	110	(1) 2/0 - #14	(1) 1/0 - #14
	208V	15.0	46.2	271	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	230V		42.0	266	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	224	300	300	(1) 600 - #2	(2) 300 - 1/0
	460V		21.0	120	150	150	(1) 2/0 - #14	(1) 3/0 - #14	99	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		17.0	105	125	125	(1) 2/0 - #14	(1) 3/0 - #14	88	110	110	(1) 2/0 - #14	(1) 1/0 - #14
AGZ100D PUMP	208V	3.0	10.6	268	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	257	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		9.6	267	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	257	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		4.8	123	175	175	(1) 2/0 - #14	(1) 3/0 - #14	118	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	575V		3.9	110	150	150	(1) 2/0 - #14	(1) 3/0 - #14	106	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	5.0	16.7	274	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	257	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		15.2	273	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	257	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		7.6	126	175	175	(1) 2/0 - #14	(1) 3/0 - #14	118	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	575V		6.1	112	150	150	(1) 2/0 - #14	(1) 3/0 - #14	106	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	7.5	24.2	282	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	257	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		22.0	279	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	257	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		11.0	129	175	175	(1) 2/0 - #14	(1) 3/0 - #14	118	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	575V		9.0	115	150	150	(1) 2/0 - #14	(1) 3/0 - #14	106	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	10.0	30.8	288	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	257	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		28.0	285	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	257	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		14.0	132	175	175	(1) 2/0 - #14	(1) 3/0 - #14	118	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	575V		11.0	117	150	150	(1) 2/0 - #14	(1) 3/0 - #14	106	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	15.0	46.2	304	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	257	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		42.0	299	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	257	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		21.0	139	175	175	(1) 2/0 - #14	(1) 3/0 - #14	118	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	575V		17.0	123	150	150	(1) 2/0 - #14	(1) 3/0 - #14	106	150	150	(1) 2/0 - #14	(1) 3/0 - #14
AGZ110D PUMP	208V	3.0	10.6	284	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	274	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		9.6	283	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	274	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		4.8	120	150	150	(1) 2/0 - #14	(1) 3/0 - #14	115	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		3.9	98	110	110	(1) 2/0 - #14	(1) 3/0 - #14	94	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	208V	5.0	16.7	290	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	274	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		15.2	289	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	274	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		7.6	123	150	150	(1) 2/0 - #14	(1) 3/0 - #14	115	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		6.1	100	125	125	(1) 2/0 - #14	(1) 3/0 - #14	94	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	208V	7.5	24.2	298	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	274	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		22.0	296	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	274	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		11.0	126	150	150	(1) 2/0 - #14	(1) 3/0 - #14	115	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		9.0	103	125	125	(1) 2/0 - #14	(1) 3/0 - #14	94	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	208V	10.0	30.8	305	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	274	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		28.0	302	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	274	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		14.0	129	150	150	(1) 2/0 - #14	(1) 3/0 - #14	115	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		11.0	105	125	125	(1) 2/0 - #14	(1) 3/0 - #14	94	110	110	(1) 2/0 - #14	(1) 3/0 - #14
	208V	15.0	46.2	320	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	274	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		42.0	316	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	274	300	300	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		21.0	136	150	150	(1) 2/0 - #14	(1) 3/0 - #14	115	125	125	(1) 2/0 - #14	(1) 3/0 - #14
	575V		17.0	111	125	125	(1) 2/0 - #14	(1) 3/0 - #14	94	110	110	(1) 2/0 - #14	(1) 3/0 - #14

Note: Power block and disconnect switch sizes are minimums. Larger sizes may be used, however the lug range must be the same.

Table 25: Electrical Data - Multi-Point (Continued)

Model	Voltage	Pump		Multiple Point Field Data - Circuit #1					Multiple Point Field Data - Circuit #2				
				Ratings			Lug Range		Ratings			Lug Range	
		HP	FLA	MCA	RFS	MFS	Power Block (1)	Disconnect Switch [1]	MCA	RFS	MFS	Power Block (1)	Disconnect Switch [1]
AGZ125D PUMP	208V	3.0	10.6	284	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		9.6	283	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		4.8	120	125	125	(1) 2/0 - #14	(1) 3/0 - #14	159	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		3.9	98	110	110	(1) 2/0 - #14	(1) 3/0 - #14	125	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	5.0	16.7	290	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		15.2	289	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		7.6	123	150	150	(1) 2/0 - #14	(1) 3/0 - #14	159	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		6.1	100	125	125	(1) 2/0 - #14	(1) 3/0 - #14	125	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	7.5	24.2	298	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		22.0	296	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		11.0	126	150	150	(1) 2/0 - #14	(1) 3/0 - #14	159	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		9.0	103	125	125	(1) 2/0 - #14	(1) 3/0 - #14	125	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	10.0	30.8	305	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		28.0	302	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		14.0	129	150	150	(1) 2/0 - #14	(1) 3/0 - #14	159	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		11.0	105	125	125	(1) 2/0 - #14	(1) 3/0 - #14	125	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	15.0	46.2	320	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		42.0	316	350	350	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		21.0	136	150	150	(1) 2/0 - #14	(1) 3/0 - #14	159	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		17.0	111	125	125	(1) 2/0 - #14	(1) 3/0 - #14	125	150	150	(1) 2/0 - #14	(1) 3/0 - #14
AGZ130D PUMP	208V	3.0	10.6	332	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		9.6	331	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		4.8	164	200	200	(1) 2/0 - #14	(2) 300 - 1/0	159	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		3.9	129	150	150	(1) 2/0 - #14	(1) 3/0 - #14	125	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	5.0	16.7	338	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		15.2	336	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		7.6	167	200	200	(1) 2/0 - #14	(2) 300 - 1/0	159	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		6.1	131	150	150	(1) 2/0 - #14	(1) 3/0 - #14	125	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	7.5	24.2	345	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		22.0	343	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		11.0	170	200	200	(1) 600 - #2	(2) 300 - 1/0	159	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		9.0	134	150	150	(1) 2/0 - #14	(1) 3/0 - #14	125	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	10.0	30.8	352	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		28.0	349	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		14.0	173	200	200	(1) 600 - #2	(2) 300 - 1/0	159	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		11.0	136	150	150	(1) 2/0 - #14	(1) 3/0 - #14	125	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	15.0	46.2	367	450	450	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		42.0	363	450	450	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	321	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		21.0	180	200	200	(1) 600 - #2	(2) 300 - 1/0	159	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		17.0	142	175	175	(1) 2/0 - #14	(2) 300 - 1/0	125	150	150	(1) 2/0 - #14	(1) 3/0 - #14
AGZ140D PUMP	208V	5.0	16.7	346	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	329	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		15.2	344	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	329	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		7.6	171	200	200	(1) 600 - #2	(2) 300 - 1/0	163	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		6.1	134	150	150	(1) 2/0 - #14	(1) 3/0 - #14	128	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	7.5	24.2	353	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	329	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		22.0	351	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	329	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		11.0	174	200	200	(1) 600 - #2	(2) 300 - 1/0	163	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		9.0	137	150	150	(1) 2/0 - #14	(1) 3/0 - #14	128	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	10.0	30.8	360	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	329	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		28.0	357	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	329	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		14.0	177	200	200	(1) 600 - #2	(2) 300 - 1/0	163	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		11.0	139	150	150	(1) 2/0 - #14	(1) 3/0 - #14	128	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	15.0	46.2	375	450	450	(2) 500 - #6	(2) 500 - 3/0	329	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		42.0	371	450	450	(2) 500 - #6	(2) 500 - 3/0	329	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		21.0	184	225	225	(1) 600 - #2	(2) 300 - 1/0	163	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		17.0	145	175	175	(1) 2/0 - #14	(2) 300 - 1/0	128	150	150	(1) 2/0 - #14	(1) 3/0 - #14
	208V	20.0	59.4	388	450	450	(2) 500 - #6	(2) 500 - 3/0	329	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	230V		54.0	383	450	450	(2) 500 - #6	(2) 500 - 3/0	329	400	400	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1
	460V		27.0	190	225	225	(1) 600 - #2	(2) 300 - 1/0	163	200	200	(1) 2/0 - #14	(2) 300 - 1/0
	575V		22.0	150	175	175	(1) 2/0 - #14	(2) 300 - 1/0	128	150	150	(1) 2/0 - #14	(1) 3/0 - #14

Note: Power block and disconnect switch sizes are minimums. Larger sizes may be used, however the lug range must be the same.

Table 26: Electrical Data - Multi-Point (Continued)

Model	Voltage	Pump		Multiple Point Field Data - Circuit #1					Multiple Point Field Data - Circuit #2				
				Ratings			Lug Range		Ratings			Lug Range	
		HP	FLA	MCA	RFS	MFS	Power Block (1)	Disconnect Switch [1]	MCA	RFS	MFS	Power Block (1)	Disconnect Switch [1]
AGZ160D PUMP	208V	5.0	16.7	346	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		15.2	344	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		7.6	171	200	200	(1) 600 - #2	(2) 300 - 1/0	196	225	225	(1) 600 - #2	(2) 300 - 1/0
	575V		6.1	134	150	150	(1) 2/0 - #14	(1) 3/0 - #14	176	225	225	(1) 600 - #2	(2) 300 - 1/0
	208V	7.5	24.2	353	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		22.0	351	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		11.0	174	200	200	(1) 600 - #2	(2) 300 - 1/0	196	225	225	(1) 600 - #2	(2) 300 - 1/0
	575V		9.0	137	150	150	(1) 2/0 - #14	(1) 3/0 - #14	176	225	225	(1) 600 - #2	(2) 300 - 1/0
	208V	10.0	30.8	360	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		28.0	357	400	400	(2) 500 - #6	(1) 600 - #1 & (2) 250 - #1	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		14.0	177	200	200	(1) 600 - #2	(2) 300 - 1/0	196	225	225	(1) 600 - #2	(2) 300 - 1/0
	575V		11.0	139	150	150	(1) 2/0 - #14	(1) 3/0 - #14	176	225	225	(1) 600 - #2	(2) 300 - 1/0
	208V	15.0	46.2	375	450	450	(2) 500 - #6	(2) 500 - 3/0	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		42.0	371	450	450	(2) 500 - #6	(2) 500 - 3/0	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		21.0	184	225	225	(1) 600 - #2	(2) 300 - 1/0	196	225	225	(1) 600 - #2	(2) 300 - 1/0
	575V		17.0	145	150	150	(1) 2/0 - #14	(2) 300 - 1/0	176	225	225	(1) 600 - #2	(2) 300 - 1/0
	208V	20.0	59.4	388	450	450	(2) 500 - #6	(2) 500 - 3/0	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		54.0	383	450	450	(2) 500 - #6	(2) 500 - 3/0	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		27.0	190	225	225	(1) 600 - #2	(2) 300 - 1/0	196	225	225	(1) 600 - #2	(2) 300 - 1/0
	575V		22.0	150	150	150	(1) 2/0 - #14	(2) 300 - 1/0	176	225	225	(1) 600 - #2	(2) 300 - 1/0
AGZ180D PUMP	208V	5.0	16.7	471	500	500	(2) 500 - #6	(2) 500 - 3/0	454	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		15.2	430	500	500	(2) 500 - #6	(2) 500 - 3/0	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		7.6	212	250	250	(1) 600 - #2	(2) 300 - 1/0	204	250	250	(1) 600 - #2	(2) 300 - 1/0
	575V		6.1	182	225	225	(1) 600 - #2	(2) 300 - 1/0	176	225	225	(1) 600 - #2	(2) 300 - 1/0
	208V	7.5	24.2	478	600	600	(2) 500 - #6	(2) 500 - 3/0	454	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		22.0	437	500	500	(2) 500 - #6	(2) 500 - 3/0	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		11.0	215	250	250	(1) 600 - #2	(2) 300 - 1/0	204	250	250	(1) 600 - #2	(2) 300 - 1/0
	575V		9.0	185	225	225	(1) 600 - #2	(2) 300 - 1/0	176	225	225	(1) 600 - #2	(2) 300 - 1/0
	208V	10.0	30.8	485	600	600	(2) 500 - #6	(2) 500 - 3/0	454	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		28.0	443	500	500	(2) 500 - #6	(2) 500 - 3/0	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		14.0	218	250	250	(1) 600 - #2	(2) 300 - 1/0	204	250	250	(1) 600 - #2	(2) 300 - 1/0
	575V		11.0	187	225	225	(1) 600 - #2	(2) 300 - 1/0	176	225	225	(1) 600 - #2	(2) 300 - 1/0
	208V	15.0	46.2	500	600	600	(2) 500 - #6	(2) 500 - 3/0	454	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		42.0	457	500	500	(2) 500 - #6	(2) 500 - 3/0	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		21.0	225	250	250	(1) 600 - #2	(2) 300 - 1/0	204	250	250	(1) 600 - #2	(2) 300 - 1/0
	575V		17.0	193	225	225	(1) 600 - #2	(2) 300 - 1/0	176	225	225	(1) 600 - #2	(2) 300 - 1/0
	208V	20.0	59.4	513	600	600	(2) 500 - #6	(2) 500 - 3/0	454	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		54.0	469	500	500	(2) 500 - #6	(2) 500 - 3/0	415	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		27.0	231	250	250	(1) 600 - #2	(2) 300 - 1/0	204	250	250	(1) 600 - #2	(2) 300 - 1/0
	575V		22.0	198	225	225	(1) 600 - #2	(2) 300 - 1/0	176	225	225	(1) 600 - #2	(2) 300 - 1/0
AGZ190D PUMP	208V	5.0	16.7	478	600	600	(2) 500 - #6	(2) 500 - 3/0	462	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		15.2	438	500	500	(2) 500 - #6	(2) 500 - 3/0	423	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		7.6	216	250	250	(1) 600 - #2	(2) 300 - 1/0	208	250	250	(1) 600 - #2	(2) 300 - 1/0
	575V		6.1	185	225	225	(1) 600 - #2	(2) 300 - 1/0	179	225	225	(1) 600 - #2	(2) 300 - 1/0
	208V	7.5	24.2	486	600	600	(2) 500 - #6	(2) 500 - 3/0	462	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		22.0	445	500	500	(2) 500 - #6	(2) 500 - 3/0	423	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		11.0	219	250	250	(1) 600 - #2	(2) 300 - 1/0	208	250	250	(1) 600 - #2	(2) 300 - 1/0
	575V		9.0	188	225	225	(1) 600 - #2	(2) 300 - 1/0	179	225	225	(1) 600 - #2	(2) 300 - 1/0
	208V	10.0	30.8	492	600	600	(2) 500 - #6	(2) 500 - 3/0	462	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		28.0	451	500	500	(2) 500 - #6	(2) 500 - 3/0	423	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		14.0	222	250	250	(1) 600 - #2	(2) 300 - 1/0	208	250	250	(1) 600 - #2	(2) 300 - 1/0
	575V		11.0	190	225	225	(1) 600 - #2	(2) 300 - 1/0	179	225	225	(1) 600 - #2	(2) 300 - 1/0
	208V	15.0	46.2	508	600	600	(2) 500 - #6	(2) 500 - 3/0	462	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		42.0	465	500	500	(2) 500 - #6	(2) 500 - 3/0	423	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		21.0	229	250	250	(1) 600 - #2	(2) 300 - 1/0	208	250	250	(1) 600 - #2	(2) 300 - 1/0
	575V		17.0	196	225	225	(1) 600 - #2	(2) 300 - 1/0	179	225	225	(1) 600 - #2	(2) 300 - 1/0
	208V	20.0	59.4	521	600	600	(2) 500 - #6	(2) 500 - 3/0	462	500	500	(2) 500 - #6	(2) 500 - 3/0
	230V		54.0	477	500	500	(2) 500 - #6	(2) 500 - 3/0	423	500	500	(2) 500 - #6	(2) 500 - 3/0
	460V		27.0	235	250	250	(1) 600 - #2	(1) 600 - #1 & (2) 250 - #1	208	250	250	(1) 600 - #2	(2) 300 - 1/0
	575V		22.0	201	250	250	(1) 600 - #2	(2) 300 - 1/0	179	225	225	(1) 600 - #2	(2) 300 - 1/0

Note: Power block and disconnect switch sizes are minimums. Larger sizes may be used, however the lug range must be the same.

Table 27: Electrical Data, Pumps Only (for field-wired pumps)

PUMP MOTOR HP	VOLTS	PUMP MOTOR FLA (EA)	MIN. CIRCUIT AMPACITY (MCA)	POWER SUPPLY FIELD WIRE QTY	POWER SUPPLY FIELD WIRE WIRE GA	POWER SUPPLY FIELD SUPP'D HUB (IN.) QTY	POWER SUPPLY FIELD SUPP'D HUB (IN.) NOM. SIZE	FIELD FUSE SIZE OR MAX. CKT. BREAKER RECOM.	FIELD FUSE SIZE OR MAX. CKT. BREAKER MAX.
1.0	208	4.6	6.0	3	10 AWG	1	0.5	10	10
1.0	230	4.2	6.0	3	10 AWG	1	0.5	6	6
1.0	460	2.1	3.0	3	10 AWG	1	0.5	3	3
1.0	575	1.7	3.0	3	10 AWG	1	0.5	3	3
1.5	208	6.6	9.0	3	10 AWG	1	0.5	10	10
1.5	230	6	8.0	3	10 AWG	1	0.5	10	10
1.5	460	3	4.0	3	10 AWG	1	0.5	6	6
1.5	575	2.4	3.0	3	10 AWG	1	0.5	3	3
2.0	208	7.5	10.0	3	10 AWG	1	0.5	15	15
2.0	230	6.8	9.0	3	10 AWG	1	0.5	15	15
2.0	460	3.4	5.0	3	10 AWG	1	0.5	6	6
2.0	575	2.7	4.0	3	10 AWG	1	0.5	6	6
3.0	208	10.6	14.0	3	10 AWG	1	0.5	20	20
3.0	230	9.6	12.0	3	10 AWG	1	0.5	20	20
3.0	460	4.8	6.0	3	10 AWG	1	0.5	10	10
3.0	575	3.9	5.0	3	10 AWG	1	0.5	6	6
5.0	208	16.7	21.0	3	10 AWG	1	0.5	35	35
5.0	230	15.2	19.0	3	10 AWG	1	0.5	30	30
5.0	460	7.6	10.0	3	10 AWG	1	0.5	15	15
5.0	575	6.1	8.0	3	10 AWG	1	0.5	10	10
7.5	208	24.2	31.0	3	10 AWG	1	0.5	50	50
7.5	230	22.0	28.0	3	10 AWG	1	0.5	45	45
7.5	460	11.0	14.0	3	10 AWG	1	0.5	20	20
7.5	575	9.0	12.0	3	10 AWG	1	0.5	20	20
10.0	208	30.8	39.0	3	8 AWG	1	0.5	60	60
10.0	230	28.0	35.0	3	10 AWG	1	0.5	60	60
10.0	460	14.0	18.0	3	10 AWG	1	0.5	30	30
10.0	575	11.0	14.0	3	10 AWG	1	0.5	20	20
15.0	208	46.2	58.0	3	6 AWG	1	0.75	100	100
15.0	230	42.0	53.0	3	6 AWG	1	0.75	90	90
15.0	460	21.0	27.0	3	10 AWG	1	0.5	45	45
15.0	575	17.0	22.0	3	10 AWG	1	0.5	35	35
20.0	208	59.4	75.0	3	4 AWG	1	1.0	125	125
20.0	230	54.0	68.0	3	4 AWG	1	1.0	110	110
20.0	460	27.0	34.0	3	10 AWG	1	0.5	60	60
20.0	575	22.0	28.0	3	10 AWG	1	0.5	45	45
25.0	208	74.8	94.0	3	3 AWG	1	1.0	150	150
25.0	230	68.0	85.0	3	4 AWG	1	1.0	150	150
25.0	460	34.0	43.0	3	8 AWG	1	0.5	70	70
25.0	575	27.0	34.0	3	10 AWG	1	0.5	60	60

Note 1: Use above data when field wiring pumps separately from the chiller unit. Data is for individual pump. Include a field supplied circuit breaker.

Note 2: Consult chiller catalog or installation manual for unit electrical data.

Pump Start Control (MicroTech® III)

The standard arrangement is for the MicroTech III unit controller pump output signal to automatically start and stop the pump(s). The specific starting method is determined by the Evap Pump Control setpoint. This setting allows the following configurations:

- #1 only - Pump A will always be used
- #2 only - Pump B will always be used
- Auto - The primary pump is the one with the least run hours; the other is used as a backup
- #1 Primary - Pump A used normally; pump B is backup
- #2 Primary - Pump B used normally; pump A is backup

#1 Only or #2 Only

Selecting [#1 only] or [#2 only] will run only the pump selected; the other is unavailable. This mode is useful for running only one pump if the other is out of service. [#1 only] is the factory default setting when there is only one pump on the pump package.

Primary/Standby Pump Staging

The pump designated as primary will start first. If the evaporator state is START for a time greater than the RECIRCULATE TIMEOUT setpoint and there is no flow, then the primary pump will be deenergized and the standby pump will start. When the evaporator is in the RUN state, if flow is lost for more than half of the FLOW PROOF setpoint value, the primary pump will shut off and the standby pump will start. Once the standby pump is started, the FLOW LOSS alarm logic will apply if flow cannot be established in the evaporator START state, or if flow is lost in the EVAPORATOR RUN state.

Auto Control

AUTO pump control is the factory default on two-pump units; the primary/standby logic above is in effect. When the evaporator is not in the RUN state, the run hours of the pumps will be compared. The pump with the least hours will be designated as the primary at this time.

Optional Local Control at Pump Panel

This control method can be selected at time of order placement and provides for one start output from the MicroTech III unit controller to start or stop pumps and two non-VFD pumps. Pump operation is controlled by a selector switch located on the door of the pump control panel. Pump #1 and Pump #2 will run the respective pump exclusively, with no duty/standby feature. The Auto position will alternate pump selection through an alternating relay, changing pump with each start.

This option does not have the desirable automatic duty/standby attribute normally associated with dual pumps. In case of a pump failure, the second pump must be started manually on the selector switch.

Pump Operating Control

Constant Flow

The pumps will run at constant speed and will start and stop automatically with the chiller unit. When the chiller is enabled to run by having its MicroTech III unit controller in the Auto state or by a signal from a BAS (not necessarily with compressors running based on availability of a cooling load), the pump panel will receive a signal to start. When there is sufficient flow to close the flow switch within a timed period (recirc timer), a proof-of-flow signal is sent to the chiller and the pump is in the Run state. If there is a call for cooling based on the chilled water temperature, the chiller will commence its compressor startup procedure. If there is no call for cooling, the chiller will be on stand-by, waiting for load.

If the flow switch does not see flow, the pump remains in the Start state until flow is established, at which time the pump will be in the Run state. Flow is recognized when the flow switch indicates flow for longer than the recir timer setpoint.

The Run state is a control condition established by satisfying certain conditions. The Start state means that a digital signal has been sent to the pump for it to start running.

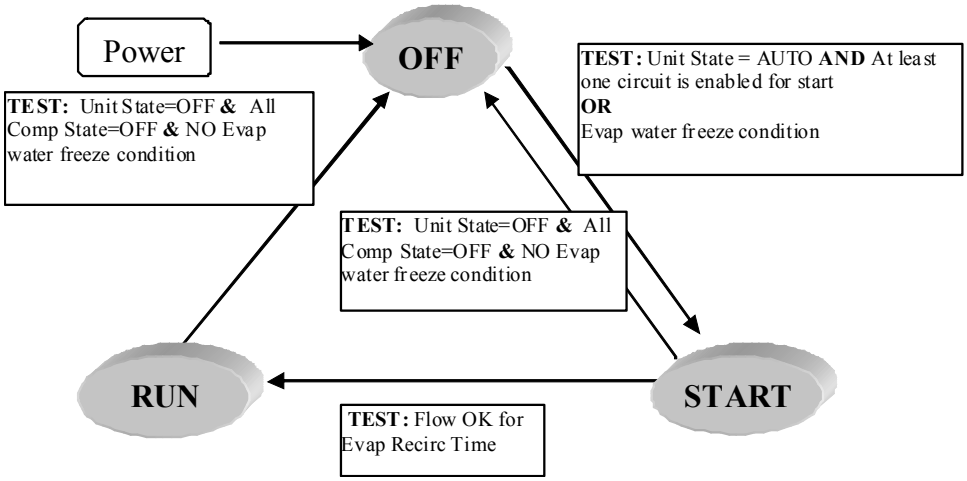
If say, a chilled water valve is closed, the pump may receive a Start signal and will run dead-headed but not actually be in the Run state as defined by the controller. No alarm is given in this condition. When the valve is opened, the flow switch will see flow, will signal this to the chiller controller, and the pump will go to the official Run state.

When starting the chiller, it is prudent to be sure there is flow so the chiller compressors will be able to start based on a call for cooling due to high chilled water temperature. Observing water pressure gauges can confirm flow.

Flow interruption will open the flow switch, sending a signal to the chiller to shut down and also de-energize the pump. If the chiller is turned off, the pump will shut off after a timed period to allow water circulation during refrigerant pumpdown.

Operation of the evaporator pump is controlled by the Pump Transition diagram in Figure 18. The pump will start on a signal from the chiller controller when either the chilled water leaving or entering temperature reaches the chiller freeze point setting to help prevent freeze up.

Figure 18: Pump Transition Diagram


Power
OFF
TEST: Unit State=OFF & All Comp State=OFF & NO Evap water freeze condition
TEST: Unit State = AUTO AND At least one circuit is enabled for start
OR
Evap water freeze condition
TEST: Unit State=OFF & All Comp State=OFF & NO Evap water freeze condition
RUN
START
TEST: Flow OK for Evap Recirc Time

Variable Flow

There are four possible pump operating modes when the pump package is equipped with the variable frequency drive (VFD) option:

1. Sensorless Pressure Control
2. BAS Control
3. Remote Sensor Control
4. Locally SElected Constant Speed Control

Sensorless Pressure Control is the factory default setting.

Sensorless Pressure Control

Speed and pressure is adjusted to match the system load. The control curve is designed to replicate sensor positions at varying distances from the pump. Sensorless control is an innovative concept in circulating pumps. Pump performance and characteristic curves for ten different speeds are embedded in the memory of the speed controller during manufacture. This data includes power, pressure and flow across the flow range of the pump.

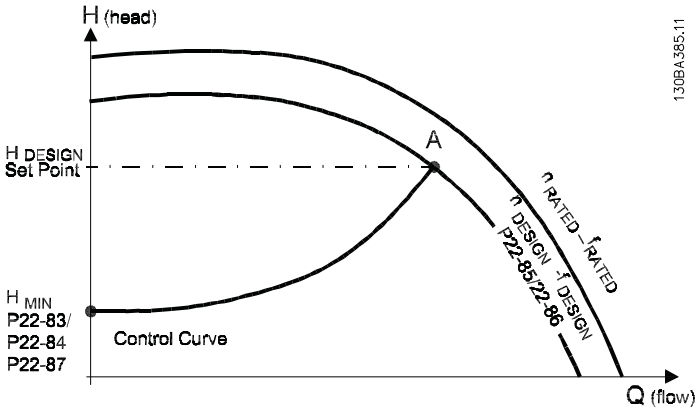
These measurements enable the pump to continuously identify the head and flow at any point in time, giving accurate pressure control without the need for external feedback signals. Patented software technology within the controller ensures trouble-free operation in all conditions.

Incorporating the pump's hydraulic data into the controller and removing sensors results in true integration of all components and removes the risk of remote sensor failure.

The default control mode for Sensorless pumps 'Quadratic Pressure Control' where the controller is set to control the speed according to a 'control curve' between max and min flow (seeFigure 19). Fitting a differential pressure sensor at the most remote load, across the supply piping and return piping encompassing the valve and coil set, is generally the best installation scheme for energy efficiency.

Sensorless control can replicate this control without the need for the remote sensor. As the flow required by the system is reduced, the pump automatically reduces the head developed according to the pre-set control curve. It is often found that using a remote differential pressure sensor to sense the pressure across a remote load could theoretically result in loads close to the pump being under-pumped. The situation would be where the load at a loop extremity is satisfied and the control valve closes while a load close to the pump needs full flow. The probability of this occurring is remote but it is possible. One answer to this is to move the sensor closer to the pump (two-thirds out in the system is a popular recommendation) although physically re-positioning the sensor at commissioning stage can be a costly exercise. With Sensorless pump control it is possible to replicate the moving of a sensor by adjusting the head setting 'Hmin'.

Figure 19: Pump Control Curve



BAS Control

The pump will speed up or slow down based on an input from the BAS. The pump control protocol is the same as ordered for the chiller unit.

Remote Sensor Control

The VFD is wired to pressure differential switch(s) mounted in the chilled water piping system. This is the standard VFD control when a sensorless VFD is not used

Locally Selected Constant Speed Control

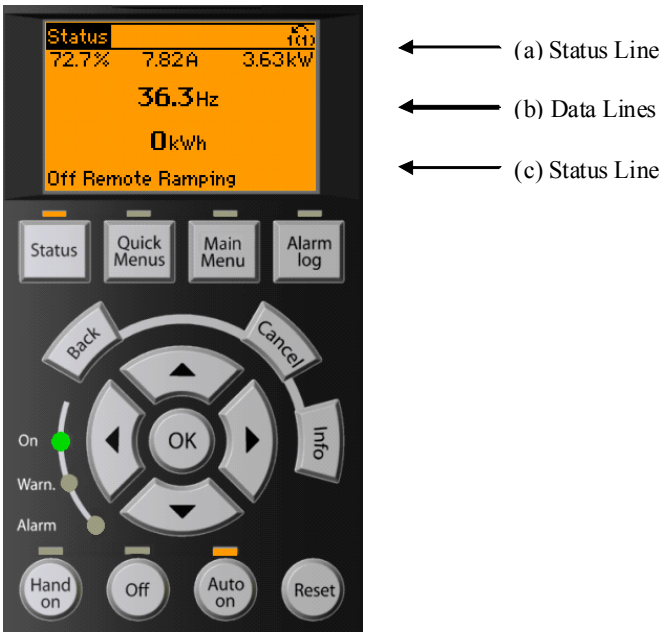
This mode is selected by pressing the Hand on key. Operation of the pump at a constant speed as selected on the VFD control panel. This mode allows selecting a pump speed to match the system curve.

Operating the VFD Controller

The VFD incorporates an integrated graphic local display and keypad to select mode, change parameters and view status and alarms. A diagram of the controller and explanation of its operation begins on page 86.

The unit is shipped in the sensorless mode. If this mode is to be used, no programming is required.

Figure 20: Graphical Local Control Panel (GLCP)



Control Functions

1. Graphical display with Status lines.
2. Menu keys and indicator lights (LED's) - selecting mode, changing parameters and switching between display functions.
3. Navigation keys and indicator lights (LEDs).
4. Operation keys and indicator lights (LEDs).

Graphical Display

The LCD-display is back-lit with a total of 6 alpha-numeric lines. All data is displayed on the LCP which can show up to five operating variables while in [Status] mode.

Graphic Display Lines

Status line: The status line is programmable with the normal setup displaying hertz on the left, Pump kw in the middle and rpm on the right. Showing the status when in status mode or up to two variables when not in status mode and in the case of Alarm/ Warning. The number of the Active Set-up (Sensorless mode being setup 1) is shown.

Line 1-2: Operator data lines displaying data and variables defined or chosen by the user. By pressing the [Status] key, up to one extra line can be added. It shows up to 5 variables with related unit, regardless of status. In case of alarm/warning, the warning is shown instead of the variables. Normal setup is to show feet of head and gpm.

Status line: Status shows the state of the inverter such as Run OK, Running on Auto Remote Running

Operating variables on the data lines (b) will vary depending on the operating mode.

- Sensorless: displays gpm and head
- External Sensor: displays gpm and head
- BAS: configured by the BAS
- Hand: displays Hz

Status Display I

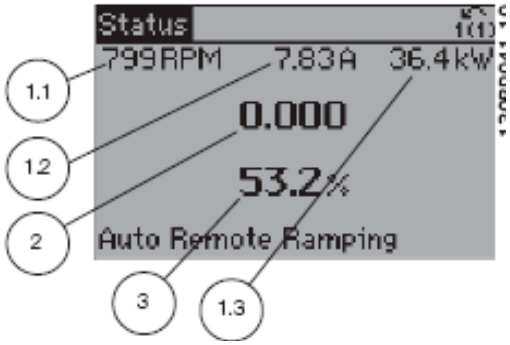
This read-out state is standard after start-up or initialization. Use [INFO] to obtain information about the value/ measurement linked to the displayed operating variables

(1.1, 1.2, 1.3, 2, and 3).See the operating variables shown in the display Figure 21. 1.1, 1.2 and 1.3 are shown in small size. 2 and 3 are shown in medium size.

Status Display II

See the operating variables (1.1, 1.2, 1.3, and 2) shown in the display in Figure 21.

Figure 21: Status Display II



In the example, Speed, Motor current, Motor power and Frequency are selected as variables in the first and second lines.1.1, 1.2 and 1.3 are shown in small size. 2 is shown in large size.

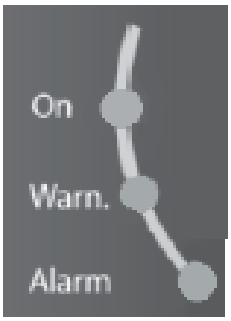
Display Contrast Adjustment

Press [status] and [?] for darker display

Press [status] and [?] for brighter display

Indicator Lights

Figure 22: LED Indicator Lights



If certain threshold values are exceeded, the alarm and/or warning LED lights up (See Figure 22). A status and alarm text appear on the control panel. The On LED is activated when the frequency converter receives power from mains voltage, a DC bus terminal, or an external 24V supply. At the same time, the back light is on.

- Green LED/On: Control section is working.
- Yellow LED/Warn.: Indicates a warning, may turn into Alarm.
- Flashing Red LED/Alarm: Indicates an alarm.

CONTROL KEYS

Menu Keys

The menu keys are divided into functions. The keys below the display and indicator lamps are used for parameter set-up, including choice of display indication during normal operation.

Figure 23: Menu Keys

Status

Three different readouts can be chosen by pressing the [Status] key repeatedly. Normal display is as shown in Figure 21.

Quick Menu

Used for programming only.

Main Menu

Used for programming all parameters.

Alarm Log

Displays an Alarm list of the ten latest alarms (numbered A1-A10). To obtain additional details about an alarm, use the arrow keys to maneuver to the alarm number and press [OK]. Information is displayed about the condition of the frequency converter before it enters the alarm mode.

The Alarm log button on the LCP allows access to both Alarm log and Maintenance log.

Back/Cancel/Info Keys

Figure 24: Back/Cancel/Info Keys

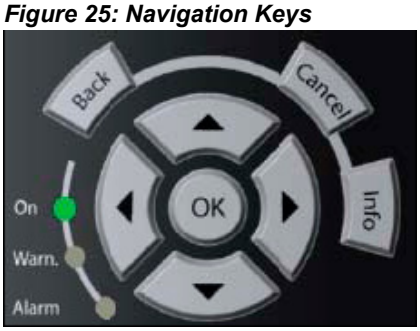
Back Cancel Info

These keys are only used for programming

Navigation Keys

The four navigation arrows (up, down, right, and left) are used to navigate between the different screen choices. Use the keys to move the cursor.

Figure 25: Navigation Keys



OK

Is used for choosing a parameter marked by the cursor and for enabling the change of a parameter.

Pump Control Keys

Operation Control Keys for local control are found at the bottom of the control panel. The key in use will have an LED illuminated above it.

Figure 26: Pump Control Keys

Hand On

Enables control of the pump speed via the graphic keypad. It will over-ride any other mode setting. Raise or lower the frequency (speed) using the up and down arrow keys. The pump will run even without a start signal from the chiller. If selected when in the Auto mode, it will start operation at the current speed, from which the speed can be changed. When going back to auto, it will be at the last Hand on speed, but quickly return to the correct automatic speed.

NOTE: The low water device (flow switch) input must be made for the pump to start in either hand mode or auto mode.

Off

Stops the pump in any operating mode.

Auto-On

Enables the pump to be controlled by either the sensorless control, the BAS or by the remote pressure sensor, depending on which operating mode is being used. When a start signal is applied on the control terminals the pump will start.

NOTE: For the pump to operate in either Sensorless mode or any other automatic control mode it is necessary to have pressed the [Auto on] button.

Reset

Used for resetting the frequency converter after an alarm (trip).

Warnings and Alarms

A warning or an alarm is signaled by the relevant LED on the front of the GLCP and indicated by a code on the display. A warning remains active until its cause is no longer present. Under certain circumstances operation of the pump may still be continued. Warning messages may be critical, but are not necessarily so. Warnings should be attended to ASAP as they can revert to an Alarm-shutting down the unit.

Viewing Warnings & Alarms

To view the warning or alarm details, press the Alarm Log key in the middle of the GLCP. Press the ? or ? key to go to the Alarm Log line and press OK. Navigate to the appropriate alarm number, press OK and view the alarm description, number and date-time stamp. A detailed description with some corrective measures is below in the section titled Warning/ Fault Messages.

Resetting Alarms

In the event of an alarm, the inverter will have tripped. Alarms must be reset to restart operation once their cause has been rectified. In many cases the auto reset function will restart the pump. Alternatively the [RESET] button on the control panel can be pressed.

NOTE: After a manual reset using the [RESET] button on the control panel, the [AUTO ON] button must be pressed to restart the pump.

If an alarm cannot be reset, the reason may be that its cause has not been rectified, or the alarm is trip-locked (see also table on following page).

Alarms that are trip-locked offer additional protection, means that the mains supply must be switched off before the alarm can be reset. After being switched back on, the inverter is no longer blocked and may be reset as described above once the cause has been rectified.

Alarms that are not trip-locked can also be reset using the automatic reset function Reset Mode (Note: automatic wake-up is possible!)

Selected warning and fault messages follow.

Warning/Fault Messages

WARNING/ALARM 3 - No motor

No motor has been connected to the output of the inverter.

WARNING/ALARM 4 - Mains phase loss

A phase is missing on the supply side, or the mains voltage imbalance is too high. This message also appears in case of a fault in the input rectifier on the inverter. Check the supply voltage and supply currents to the inverter.

WARNING/ALARM 9 - Inverter overloaded

The inverter is about to cut out because of an overload (too high current for too long). The counter for electronic, thermal inverter protection gives a warning at 98% and trips at 100%, while giving an alarm. You cannot reset the inverter until the counter is below 90%.The fault is that the inverter is overloaded by more than nominal current for too long.

WARNING/ALARM 10 - Motor ETR over temperature

According to the electronic thermal protection (ETR), the motor is too hot. You can choose if you want the inverter to give a warning or an alarm when the counter reaches 100% in programming par. 1-90 Motor Thermal Protection. The fault is that the motor is overloaded by more than nominal current for too long. Check that the motor in programming par. 1-24 Motor Current is set correctly.

WARNING/ALARM 11 - Motor thermistor over temp

The thermistor or the thermistor connection is disconnected. You can choose if you want the inverter to give a warning or an alarm in par. 1-90 Motor Thermal Protection. Check that the thermistor is connected correctly between terminal 53 or 54 (analog voltage input) and terminal 50 (+ 10 Volts supply), or between terminal 18 or 19 (digital input PNP only) and terminal 50. If a KTY sensor is used, check for correct connection between terminal 54 and 55.

WARNING/ALARM 13 - Over Current

The inverter peak current limit (approx. 200% of the rated current) is exceeded. The warning will last approx. 8-12 sec, then the inverter trips and issues an alarm. Turn off the inverter and check if the motor shaft can be turned and if the motor size matches the inverter.

ALARM 14 - Earth fault

There is a discharge from the output phases to earth, either in the cable between the inverter and the motor or in the motor itself. Turn off the inverter and remove the earth fault.

ALARM 16 - Short-circuit

There is short-circuiting in the motor or on the motor terminals. Turn off the inverter and remove the short-circuit.

WARNING 23 - Internal fans

External fans have failed due to defective hardware or fans not mounted.

WARNING/ALARM 29 - Drive over temperature

If the enclosure is IP00, IP20/Nema1 or IP21/TYPE 1, the cutout temperature of the heat-sink is 95°C +5°C. The temperature fault cannot be reset, until the temperature of the heatsink is below 70°C. The fault could be Ambient temperature too high or Too long motor cable

ALARM 30 - Motor phase U missing

Motor phase U between the frequency converter and the motor is missing. Turn off the frequency converter and check motor phase U.

ALARM 31 - Motor phase V missing

Motor phase V between the inverter and the motor is missing. Turn off the inverter and check motor phase V.

ALARM 32 - Motor phase W missing

Motor phase W between the inverter and the motor is missing. Turn off the frequency converter and check motor phase W.

ALARM 33 - Inrush fault

Too many power ups have occurred within a short time period.

WARNING/ALARM 36 - Mains failure

This warning/alarm is only active if the supply voltage to the inverter is lost and par. 14-10 Mains Failure is NOT set to OFF. Possible correction check the fuses to the frequency converter

WARNING/ALARM 37 - Phase Imbalance

There is a current imbalance between the power units.

WARNING 49 - Speed limit

The speed has been limited by range in par. 4-11 Motor Speed Low Limit [RPM] and par. 4-13 Motor Speed High Limit [RPM].

ALARM 50 - AMA calibration failed

Contact Daikin Applied service.

ALARM 51 - AMA check Unom and Inom

The setting of motor voltage, motor current, and motor power is presumably wrong. Check the settings.

WARNING 59 - Current limit

The current is higher than the value in par. 4-18 Current Limit.

WARNING 60 - External Interlock

External Interlock has been activated. To resume normal operation, apply24 V DC to the terminal programmed for External Interlock and reset the inverter (via Bus, Digital I/O or by pressing [Reset]).

WARNING 66 - Heatsink Temperature Low

The heat sink temperature is measured as 0 °C. This could indicate that the temperature sensor is defective and thus the fan speed is increased to the maximum in case the power part or control card is very hot. If the temperature is below 15 °C the warning will be present.

ALARM 68 - Safe Stop

Safe Stop has been activated. To resume normal operation, apply 24 VDC to terminal 37 then send a Reset signal (via Bus, Digital I/O or by pressing [Reset]).

ALARM 69 - Pwr. Card Temp

Power card over temperature.

ALARM 92 - No Flow

A no load situation has been detected for the system. See parameter group 22-2*.

ALARM 93 - Dry Pump

A no flow and high speed indicates that the pump has run dry. See parameter group 22-2*.

ALARM 96 - Start Delayed

Start of the motor has been delayed due to short cycle protection is active. See parameter group 22-7*.

VFD Operation

The VFD constantly monitors the chilled water system's state.

When the building cooling load drops, air side controls will start to close in order to control the space temperature. At that instant in time, the pump power draw will start to drop. The drive will notice this and slow down the pump (Hz output will decrease), which then triggers a decrease in flow and head since the pump impeller rpm is dropping.

The reverse is true, when the load increases (valves open), the power draw will increase and the drive will speed up (Hz goes up) and the flow and head increases.

Both flow and head will fluctuate and since they are being read instantaneously, as opposed to an averaged value, even the slightest change is registered on the screen. This gives the readings a jumpy appearance.

A building's cooling load tends to change slowly and it may be difficult to discern load changes by merely observing the VFD display. However, the pump rpm, Hz and kW can be noted over time and used for reference. A given building load will have a discrete reading.

Observing the pump kW power input at various cooling loads will indicate the large amount of electrical energy saved by the VFD.

In addition to making any settings required, it is often desirable to run the pumps without the chiller running to check the chilled water circuit. De-energize the compressors by turning off the three switches located in the unit left-hand control panel (SW1, PS1 and PS2). Energize the unit by closing the main disconnect located in the right-hand panel door. Non-VFD pumps can then be operated using the switch located on the door of the pump control panel. Use the dispay keypad on VFD unit for operation. Press the Hand on key and use the ? or ? key to regulate the pump speed and flow. The VFD should be changed to the Auto mode for normal operation.

Setting the Operating Mode

For convenience, the operating parameters for each of the three operating modes have pre-programmed setups.

Setup #1 Sensorless

The pump control is factory set for this mode and no field changes or programming is required.

Setup #2 External Sensor

Normally a differential pressure sensor.

Setup #3 BAS

Hand On

Manual operation - not programmed.

Change from the sensorless default setup #1 to setup #2 or #3 on the graphic keypad display as follows. See Figure 20, page 48 for key locations.

1. Press the OFF key. The keypad display will remain powered.
2. Press the MAIN MENU key. Should show parameter "0-** Operations/Display".
3. Press OK.
4. Press ▼ key to 0-1 "Set UP Operations".
5. Press "OK". Display goes to 0-10 "Active Setup"
6. Press "OK". Display will show boxed #1, #2, or #3
7. Press ▼ or ▲ key to select either mode #2 or #3. #1 is factory default.
8. Press OK. The upper right-hand corner of the display should show 2(2) or 3(3) depending on the choice.
9. Press AUTO for normal operation.
10. Press STATUS to return to the normal operating screen.

Pre-start Up

Follow the chiller start-up procedure outlined in the current chiller installation and operating manual, available on www.DaikinApplied.com. In addition, check that the pump package is operating normally in accordance with its sequence of operation.

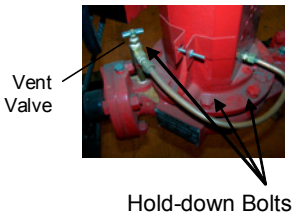
Check rotation of the pump by bumping it. It should be clockwise when viewed from the top of the motor looking down at the fan rotation.

Do not run the pump without fluid in the system. Fluid is required to cool and lubricate the pump.

Before starting pump(s) and with water in the pump, purge the seal flush line by cracking the vent valve until water appears. The valve will protrude from the pump insulation. The seal is the highest point in the pump and requires water for sealing and lubrication.

VFD equipped pumps are shipped with the pump VFD controller in the AUTO mode. Confirm this by checking the VFD controller and pressing the Auto key if necessary. The AUTO ON button is located at the bottom on the controller. See Figure 20, page 48.

Check that the "Y" strainer valve is open (horizontal position) and the triple-duty valve is open.



Start Up

Occasionally the impeller may be temporarily bound up and will not turn at start up. If this is the case, loosen the insulation and loosen the hold-down bolts holding the motor assembly to the pump casing (do not remove them) and bump the pump.

The pump package is shipped with three strainers:

- A "Y" type strainer at the unit inlet connection
- A perforated strainer located in the inlet guide assembly at the inlet of the pump.
- A fine mesh temporary start-up strainer located in the inlet guide.

The "Y" strainer has a finer mesh than the inlet guide strainer and should catch most debris before it reaches the inlet guide strainer, which also functions as suction flow direction device.

No special attention need be paid to the suction guide strainer at initial start-up. It will strain the pumped fluid and stabilize the flow into the pump suction automatically.

Removing Temporary Strainer

The temporary strainer must be removed following system clean up as follows:

After all debris has been removed from the system, or a maximum of 24 running hours, stop the pump and close the pump isolation valves. Drain the suction guide by removing the drain plug or opening the blowdown valve, if installed. Remove the insulation disc held on with Velcro (the disc has a "CAUTION Remove Startup Strainer After 24 Hours" sticker). Remove the suction guide cover and remove the strainer assembly from the valve body.

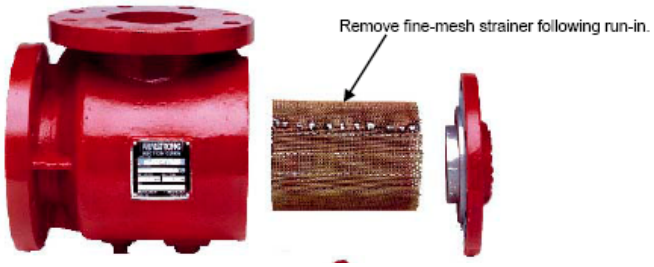
The temporary fine-mesh start-up strainer is tack-welded to the permanent stainless steel strainer. This temporary strainer should now be removed from the permanent strainer. The fine-mesh strainer is designed to remove small particulate from new piping systems and could easily clog with debris if left in place. This will be detrimental to the operation of the pump.

Replace the permanent strainer into the fitting body, once the temporary strainer is removed.

Inspect the cover O-ring and replace if necessary. Replace the cover into the body. Ensuring that the strainer is properly seated, tighten the cover bolts diagonally, evenly and firmly.

The seal may drip at initial start up as it breaks in. If the drip continues for more than a few hours, service may be required.

Figure 27: Temporary Strainer to be Removed



Seasonal Shutdown

Follow the instructions in the chiller unit for seasonal shutdown procedures. In addition for the pump package:

No components or piping on the pump package are heat traced. If heat tracing is field installed, carefully remove the factory insulation, install the heat tracing and carefully replace the insulation, being careful to seal it against moisture penetration.

If draining the chilled water system, see diagrams beginning on page 5 for the location of drain points in the piping and pumps, both of which must be thoroughly drained.

Introduction

The VFD pump supports an optional interface that allows control by a Building Automation System (BAS). The pump can be integrated to a BAS via BACnet® MS/TP, LONWORKS® or Modbus network protocols. The appropriate MicroTech® III communication module must be selected as a factory-installed option on the AGZ-D chiller. The chiller communication module determines the corresponding protocol of the VFD pump package frequency converter. The VFD pump controller ships from the factory with the protocol option that matches the communication module selected with the chiller. Note that while BACnet IP is offered as a factory-installed option on the AGZ-D chiller, BACnet IP is not offered on the VFD frequency converter. If a chiller unit is ordered with BACnet IP, the VFD will be provided with BACnet MS/TP. The VFD controller comes with an attached "option card" for BACnet and LonWorks. The VFD controller is a native Modbus device and does not require an "option card" for the Modbus protocol.

Network parameters are set using the VFD controller's graphical interface. The following sections describe the parameters that are required to enable communications from the VFD pump directly to the BAS via BACnet MS/TP, LONWORKS, or Modbus. Selecting a specific communication protocol changes various default parameter settings to match that protocol's specifications along with making additional protocol-specific parameters available from the BAS.

VFD Network Integration

Use the VFD controller's graphical interface to set unit parameters and factory defaults for unit setpoints. Refer to the previous section in this IOMM for details on how to use the graphical interface.

Network configuration involves: 1) selecting the Control Protocol for BACnet, LONWORKS, or Modbus, and 2) then setting the specific network parameters as required by each protocol. The addressing parameters specific to BACnet, LONWORKS, and Modbus are described separately in the sections that follow.

The comprehensive set of network parameters available from the VFD pump to the BAS (i.e. point lists) are provided in separate AGZ-D VFD Pump Controller Operations Manuals for each protocol. These point lists can be found on www.DaikinApplied.com in both the MicroTech III Controls and AGZ-D chiller literature pages. For questions regarding the VFD pump operation and set up, please contact the chiller Technical Response Group (TRC) at 877-349-7782.

Note: AGZ-D chiller VFD controllers support only BACnet MS/TP, LONWORKS, and Modbus communications. Daikin Applied does not support other protocol options that may be offered by the VFD manufacturer.

Configuring the VFD Controller for BACnet MS/TP Communication

This following section assumes you are using a BACnet Option Card in conjunction with the AGZ-D pump package frequency converter (see Figure 28). It is also assumed that the VFD pump controller is connected to a "master" BAS or PC equipped with a serial communication card supporting all the BACnet communication services required by your application, and that all requirements stipulated in the BACnet standard, as well as those pertaining to the VFD pump controller are strictly observed as well as all limitations therein fully respected.

The BACnet Option Card is designed to communicate with any master complying with the BACnet standard. Familiarity with the PC used as a master in the system is assumed.

Light Emitting Diodes (LEDs)

Two bi-colored LEDs indicate communication activity and status of BACnet communications. These indicators can be seen when the BACnet Option Card is connected to the VFD pump controller. Descriptions of the two LEDs are summarized in Table 29 and Table 30.

Figure 28: BACnet Option Card

Steps for BACnet MS/TP Configuration

1. Set the basic BACnet MS/TP network parameters using the VFD graphical interface. These BACnet parameters are described in Table 28 below. It is recommended that additional parameters available in menu 8-* should remain at factory defaults. See VFD installation manual for further details (available on www.DaikinApplied.com).
2. Cycle power to the VFD controller for changes to take effect.
3. Verify connection from BAS to VFD - terminals 62 (+) and 63 (-) on top of BACnet Option Card. Refer to Table 28.
4. The VFD controller is now ready for network configuration from the BAS. Refer to the BACnet Operations Manual for the AGZ-D VFD Controller, which is available on www.DaikinApplied.com, for a complete points list and additional configuration information.

Table 28: BACnet MS/TP Network Configuration Parameters

Parameter	Setting for BACnet; Note	Default Value
8-02 Control Source	Option A [3] ; During initial power-up, the frequency converter automatically sets this parameter to Option A [3] if it detects a valid fieldbus option installed in slot A	FC Port [1] Note: This parameter cannot be adjusted while the motor is running.
8-30 Protocol	BACnet	Digital and control word
8-31 Address	0-127; This value must be unique throughout the MSTP trunk	FC RS485
8-32 Baud Rate	9600/19,200/38,400/76,800 baud; All devices on the MSTP trunk must be set to the same baud rate	9600 baud
8-70 BACnet Device Instance	0-4194303; This value must be unique throughout the entire BACnet network.	1
8-72 MS/TP Max Masters	1-127; Dependent on the Number of Masters in the system	127
8-73 MS/TP Max Info Frames	1-65534; Defines how many info/data frames the device is allowed to send while holding the token	1

Figure 29: BACnet MS/TP Connection

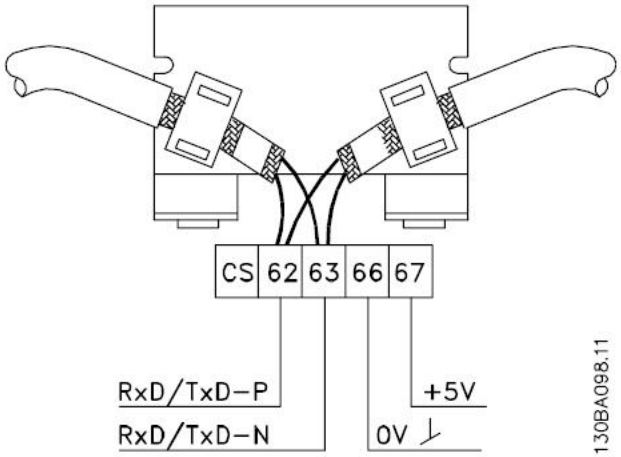


Table 29: LED 1 - Net Activity

Phases	Bi-colour LED	Status
Power On	Red	The PROFIBUS card is defect. Contact Danfosss Drives
	Green	The PROFIBUS card is OK.
Search baud rate	Green	Searching for the baud rate. Check the connection to the master if it stays in this state.
Wait Parameterizing	Green	Baud rate found - waiting for parameters from the master.
	Red	Wrong parameters from the master.
Wait Configuration	Green	Parameters from master OK - waiting for configuration data.
	Red	Wrong Configuration data from the master.
Data Exchange	Green	Data Exchange between the master and the Frequency Converter is active.
	Red	Clear State. Warning 34 is active and a bus reaction in parameter 8-04 is executed.

Table 30: LED 2 - BACnet Option Card Activity

Bi-colour LED	Status
No light	No PROFIBUS DPV1 communication is active.
Green	DP V1 communication from a Master Class 1 (PLC) is active.
Green	DP V1 communication from a Master Class 2 (MCT 10, FDT) is active.
Green	DP V1 communication from a Master Class 1 and 2 is active.
Red	Internal error.

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Configuring the VFD Controller for LONWORKS Communication

Introduction

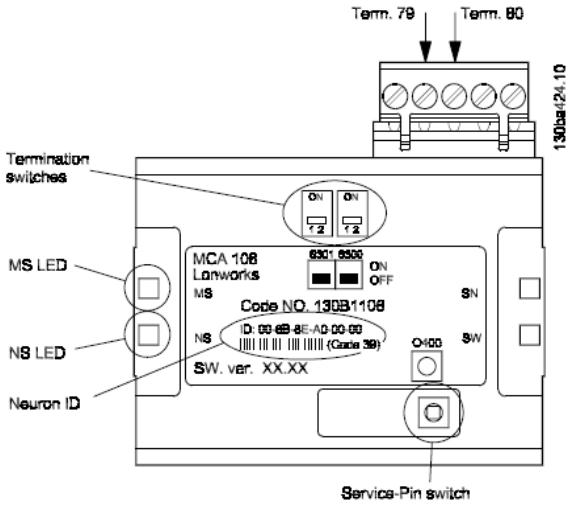
This following section assumes you are using a LONWORKS Option Card in conjunction with the AGZ-D pump package frequency converter (see Figure 30, LONWORKS Connection). The LONWORKS Option Card is LonMark 3.4 certified. It is designed to communicate with any system complying with the FTT-10A and 78kbps LONWORKS standard. Familiarity with this technology is assumed.

The LONWORKS communications structure is similar to that of a local area network (LAN) in that messages are continually exchanged between a number of processors. A LONWORKS system is a local operating network (LON). LON technology offers a means for integrating various distributed systems that perform sensing, monitoring, control, and other automated functions. A LON allows these intelligent devices to communicate with one another through a variety of communications media using a standard protocol. LON technology supports distributed, peer-to-peer communications. That is, individual network devices can communicate directly with one another without the need for a central control system.

Data are transported by means of standard network variable types (SNVTs) which provide the interface for communication between devices from different manufacturers. LONWORKS-defined functional profiles determine the functionality and network variables for a particular family of devices (e.g. frequency converters, pumps etc.) are also available, and supported by the LONWORKS option.

The VFD controller typically does not involve network addressing to enable BAS communication. However, there are several basic steps required for LONWORKS integration, which are described in the following section. Additionally, the available network parameters are available via the graphical interface as shown in Table 31.

Figure 30: LONWORKS Connection



Service Pin Switch

The service pin generates a service-pin message that contains the Neuron® ID and the program code identification of the node. A service-pin message is a network message that is generated by a node and broadcast on the network. It can be used to commission the VFD controller to the LONWORKS network. The service pin switch is located on the lower right-hand corner of the LonWorks Option Card. See Figure 30 for location of the service pin.

Light Emitting Diodes (LEDs)

Two LEDs indicate communication activity and status of the LonWorks Option Card. These indicators can be seen when the LonWorks Option Card is connected to the VFD pump controller. Descriptions of the two Service LEDs are summarized in and Table 32

Steps for LONWORKS Configuration

1 Commission the VFD controller by pressing the service pin (see Figure 30). Doing so generates a service-pin message, which is broadcast on the network and contains the Neuron ID and the program code identification of the node.

2 Cycle power to the unit controller after 1) commissioning a device, 2) de-commissioning an existing device, and 3) subsequent re-commissioning of an existing device.

3 Review the LONWORKS network parameters as described in Table 31 below. It is recommended that remaining items in menus 8-* and 11-* remain at factory defaults. See VFD installation manual, available on www.DaikinApplied.com for further details.

4 Verify connection from VFD to BAS - terminals 79 (Net A) and 80 (Net B) on top of LONWORKS Option Card. See Figure 30 for terminal locations.

5 The VFD controller is now ready for network configuration from the BAS. Refer to the LONWORKS Operations Manual for the AGZ-D VFD Controller, which is available on www.DaikinApplied.com, for a complete points list and additional configuration information.

Table 31: LONWORKS Network Parameters

Parameter	Value (Range)/Definition	Default Value
8-02 Control Source	Option A [3]/During initial power-up, the frequency converter automatically sets this parameter to Option A [3] if it detects a valid fieldbus option installed in slot A	FC Port [1]
11-0 Neuron ID	Variable/This is the neuron ID of the Lonworks module.	Variable/This item will be blank if the communication module is not commissioned.
11-10 Drive Profile	VSD Profile [0]/This parameter indicates the LONMARK functional profile	VSD Profile [0]
11-15 LON Warning Word	(0-FFFF)/This parameter contains LON specific warnings.	N/A
	Bit / **Status**	
	0 / Internal Fault	
	1 / Internal Fault	
	2 / Internal Fault	
	3 / Internal Fault	
	4 / Internal Fault	
	5 / Reserved	
	6 / Reserved	
	7 / Reserved	
	8 / Reserved	
	9 / Invalid type change for changeable types	
	10 / Initialization error	
	11 / Internal communication error	
	12 / Software revision mismatch	
	13 / Bus not active	
	14 / Option not present	
	15 / LON input (nvi/nci) exceeds limits	
11-17 XIF Revision	0 N/A/This parameter contains the version of the external interface file on the Neuron C chip on the LON option	0 N/A
11-18 LonWorks Revision	0 N/A/This parameter contains the software version off the application program on the Neuron C chip on the LON option.	0 N/A
11-21 Store Data Values	Off [0] or Store all setups [2]/This parameter is used to activate storing of data in non-volatile memory.	When activated (set to [2] Store all setups), all parameters are stored in EEPROM; the value returns to [2] Off when all parameter values have been stored.

Note: It is recommended that remaining items in menus 8-* and 11-* remain at factory defaults. See VFD installation manual, available on www.DaikinApplied.com for further details.

Table 32: MS: Service LED (Red)

Situation	LED Activity	Description
Configured state (normal operation)	½ sec. ON, then continuously OFF	The node is configures and running normally.
Non-configured state	Flashing ½ Hz	Node is not configures but has an application. Proceed w ith loading node.
Applicationless state	1 sec. ON, 2 sec. OFF, then continuously ON	Node has no application, the LonWorks option needs replacing or reprogramming
Watchdog resets	Short flash about each 3 sec.	Indicates problem w ith application. The LonWorks option needs replacing.
Faulty hardw are	Steady ON or OFF	The LonWorks option needs replacing.

Configuring the VFD Controller for Modbus Communication

Introduction

The VFD controller (frequency controller) is a native Modbus device. In other words, it does not require any additional communication card or other hardware for integration into a building automation system (BAS) via the Modbus network. The configuration process is described in the following section. It is assumed that the user is familiar with Modbus technology and terminology.

Standard Modbus network rules apply. The network is a daisy-chain of unit controllers including the master (in this case, the BAS) and all slaves (VFD controller). The Modbus standard recommends that the network be terminated on each end with the characteristic impedance of the network (about 120 ohms). Follow the guidelines stated in the Modbus specifications.

Steps for Modbus Configuration

Configurable Parameters

Table 33 defines the network parameters of the Modbus Communication Module that are available via the graphical interface. The Modbus network address and data transmission rate (Baud Rate) are available via the local control panel. At a minimum, you must set the network address and verify the correct baud rate before establishing network communication between the VFD controller and the BAS. Change remaining parameters as required for your network.

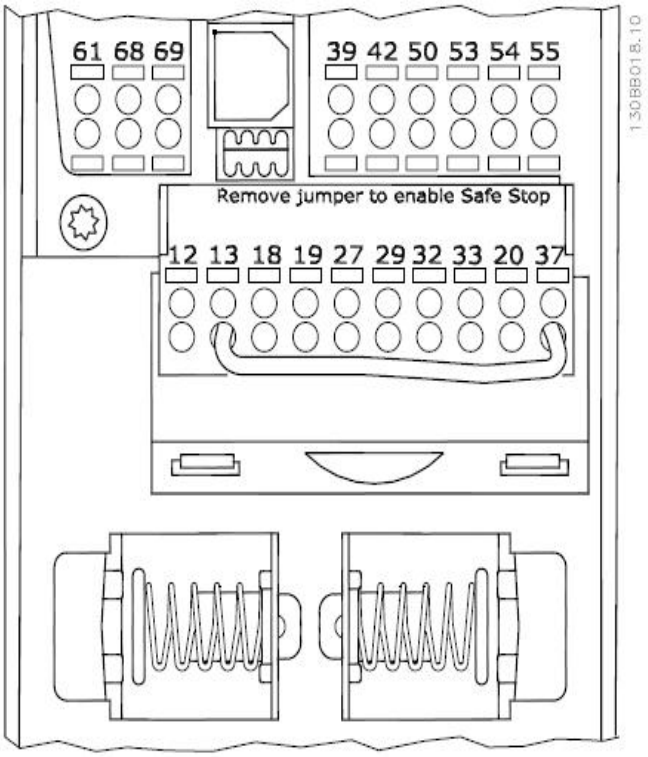
1. Set the Modbus network parameters as described in Table 21. It is recommended that remaining items in menus 8-* remain at factory defaults. See VFD installation manual, available on www.DaikinApplied.com for further details.
2. Cycle power to the VFD controller for changes to take effect.
3. Verify connection from BAS to VFD - terminals 68 (+) and 69 (-) on the main control board of the frequency converter. Refer to Figure 35.
4. The VFD controller is now ready for network configuration from the BAS. Refer to the Modbus Operations Manual for the AGZ-D VFD Controller, which is available on www.DaikinApplied.com, for a complete points list and additional configuration information.

Table 33: Modbus Network Parameters

Parameter	Value (Range)/Definition	Default Value
8-02 Control Source	FC Port [1]/ On-board RS-485 port	FC Port [1]
8-30 Protocol	Modbus RTU [2]/The protocol setting for the communication port	FC [0]
8-31 Address	1-247/The Modbus Address of the VFD; This address must be unique throughout the entire Modbus network.	1
8-32 Baud Rate	2400 - 115200/This value should be set the same as all other devices on the trunk.	9600 baud [2]
8-33 Parity/Stop Bits	Even parity, 1 stop bit [0]; Odd Parity, 1 Stop Bit [1]; No Parity, 1 Stop Bit [2]; No Parity, 2 Stop Bits [3]/Set to match the network settings	Even parity, 1 stop bit [0]

Note: Note: Remaining items in menus 8-* should likely remain at factory defaults. See VFD installation manual for further details.

Figure 31: Modbus RTU Connection



⚠ DANGER

Electric equipment can cause electric shock with a risk of severe personal injury or death. Turn off, lock out and tag all power before continuing with following service. Panels can have more than one power source.

⚠ CAUTION

Service must be performed by trained, experienced refrigeration personnel familiar with equipment operation, maintenance, correct servicing procedures, and the safety hazards inherent in this work. Causes for repeated tripping of equipment protection controls must be investigated and corrected.

Lubrication

No routine lubrication is required on pump packages. The pump motors are TEFC and permanently lubricated. The pump seal is cooled and lubricated by the pumped fluid.

POE type oil is used for compressor lubrication.

⚠ WARNING

POE oil must be handled carefully using proper protective equipment (gloves, eye protection, etc.) The oil must not come in contact with certain polymers (e.g. PVC), as it may absorb moisture from this material. Also, do not use oil or refrigerant additives in the system.

For unit lubrication requirements, consult the current version of the chiller operation manual at www.DaikinApplied.com.

Mechanical Seal

Mechanical seals require no special attention. The mechanical seal is fitted with a flush line. The seal is flushed from discharge of the pump casing and is flushed/vented to the suction on close coupled pumps.

Do not run the pump unless properly filled with water as the mechanical seals need a film of liquid between the faces for proper operation.

Mechanical seals may 'weep' slightly at start-up. Allow the pump to continue operating for several hours and the mechanical seal to 'seat' properly prior to calling for service personnel.

Electrical Terminals

Electrical connections should be checked for tightness during initial startup and annually thereafter.

Figure 32: Pump Preventative Maintenance Schedule

PREVENTATIVE MAINTENANCE SCHEDULE			
OPERATION	**WEEKLY**	**MONTHLY (Notes)**	**ANNUAL (Notes)**
General			
Visually inspect unit for loose or damaged components and visible leaks		**X**	
Inspect thermal insulation for integrity			**X**
Clean and paint as required			**X**
Electrical			
Check contactors for pitting, replace as required			**X**
Check terminals for tightness, tighten as necessary			**X**
Clean control panel interior			**X**
Visually inspect components for signs of overheating		**X**	
Strainers			
Clean strainers (Note 3)		**X**	

Notes:
Monthly operations include all weekly operations.Annual (or spring start-up) operations include all weekly and monthly operations.If several monthly strainer checks indicate a clean system, the frequency can be extended.

Pump Removal

The 4392 pump must be shut down and drained in order to remove either pump's rotating assembly. If it is desired to run the remaining pump during the replacement procedure, a blanking plate and gasket can be installed to seal off the removed pump cavity. The removal procedure is as follows:

1. Stop, isolate and drain the 4392 unit, in the usual manner
2. For the pump to be serviced:
3. Isolate and disconnect the motor cable.
4. Close the flush / vent line valve and disconnect the tubing from the adapter fitting.
5. Line mark the parts (Casing /Adapter & Adapter Motor) to confirm re-assembly locations.
6. Remove the adapter/casing bolts and lift the rotating assembly (motor, adapter, impeller, etc) out of the casing.
7. Remove the existing gasket and ensure the gasket surfaces on the adapter and casing are smooth & clean.
8. Insert the 4392 blanking plate fit and cross-tighten bolts evenly (to 50 ft-lbs)
   - 6-inch impeller (PN 427804-0612 - Plate with Gasket).
   - 8-inch impeller (PN 427804-0812 - Plate with Gasket)
9. Open system isolation valves and re-start the duty pump.
10. Reverse process when repaired rotating assembly is ready for installation.

Daikin Applied Training and Development

Now that you have made an investment in modern, efficient Daikin Applied equipment, its care should be a high priority. For training information on all Daikin Applied HVAC products, please visit us at www.DaikinApplied.com and click on Training, or call 540-248-9646 to speak with the Training Department.

Warranty

All Daikin Applied equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local Daikin Applied sales representative for warranty details. To find your local Daikin Applied representative, go to www.DaikinApplied.com.

Aftermarket Services

To find your local parts office, visit www.DaikinApplied.com or call 800-37PARTS (800-377-2787).

To find your local service office, visit www.DaikinApplied.com or call 800-432-1342.

This document contains the most current product information as of this printing. For the most up-to-date product information, please go to www.DaikinApplied.com.

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